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# Beyond the basics

Visit a New England layout a step above in accuracy

How the MR staff built realistic urban structures for the Beer Line layout

## **HOW TO**

- Add a WORKING beacon to an N SCALE diesel
- Build a REALISTIC trackside FOUNDRY
- Put a DCC DECODER into a BRASS diesel
- Make LIGHTWEIGHT waffle-style BENCHWORK

## **PLUS**

- DETAILS for a time and place, STEP BY STEP
- Tips on operating DOUBLEHEADERS and PUSHERS

John Grosner accurately models trains, track, and city structures on his HO scale layout. See page 58



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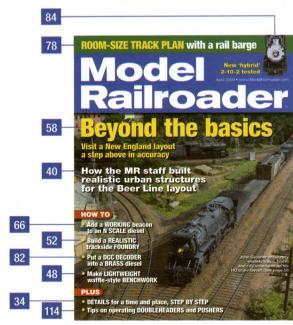
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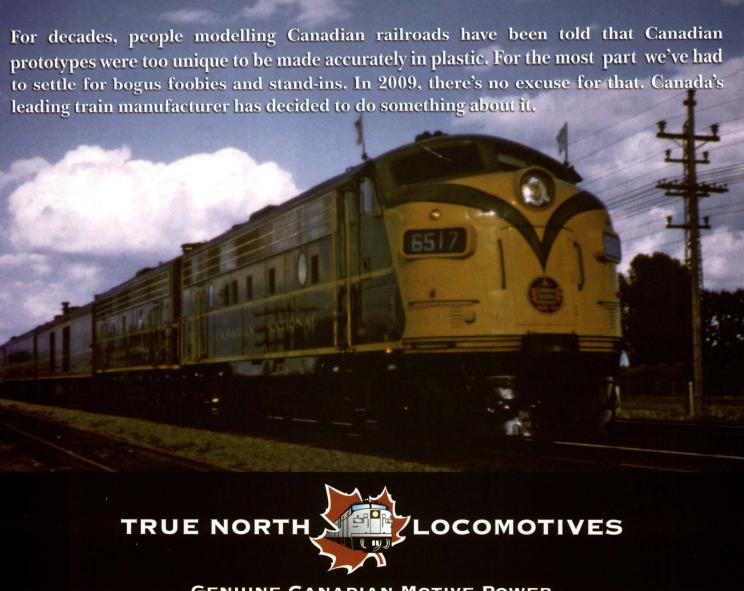
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Coming next issue: Andy Sperandeo and David Popp walk you through operating our HO scale Beer Line project railroad. Bill Zuback photo



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Paint schemes are CN (1954 Scheme); CN (Wet Noodle); VIA-CN (two versions); VIA Rail Canada; Algoma Central; and Undecorated. MSRP is \$299.95 (DC/DCC/Sound) or \$169.95 (DC only). Full information including all model features is available on our web site. Delivery is late 2009. Reserve with your dealer by August 1st to guarantee delivery. Why should you have to compromise just because you are a CN modeller?

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**RAPIDO** 

# From the Editor

# **Try different** techniques

**Neil Besougloff, Editor** 

There are dozens of ways to build a model railroad, and often the best layouts are built by model railroaders who regularly sample different construction materials and techniques.

For example, last year when the Model Railroader staff was building the Beer Line layout (see page 40), those of us assigned to help associate editor Cody Grivno complete the scenery used his techniques.

Cody is fond of using alcohol (not the drinking kind) to wet down scenery material before applying Woodland Scenics Scenic Cement. He sprays or dribbles 70 percent isopropyl alcohol onto ballast, ground foam, or whatever material he is using, then carefully applies Scenic Cement using plastic pipettes (sort of a cross between a straw and an eye dropper) to adhere the material.

The alcohol breaks the surface tension of the glue, so the adhesive sinks right into the material instead of beading up on the surface.

At home I've used a different technique. Instead of alcohol, I use water with a few drops of dish soap. Why? Because I can always get more dish soap from the kitchen if I run out. Getting more Isopropyl alcohol requires a trip to Walgreens.

I also use different adhesive plain old white glue diluted about



50:50 with water. I don't use a pipette like Cody; I just put my 50:50 mix into an old Elmer's glue bottle and use the orange cap to direct the flow.

I'm sticking with dish soap and white glue, but I did learn from Cody that a plastic pipette gives me far greater control than an orange plastic cap.

Same goes for wiring. Retired managing editor Dick Christianson and his longtime model railroading friend John Grams painstakingly soldered each and every connection on Dick's old layout. and I used to think that soldering was the way to go for a reliable model railroad.

But after visiting executive editor Andy Sperandeo's layout for the first time, I was intrigued by his use of insulation displacement connectors, commonly known as "suitcase connectors." to link track feeders to bus wires. I bought a package of them at a hardware store, used them on my next layout, and the layout after that. I'll never go back.

Those are just two examples, but you can see my point - we all become smarter model railroaders and build better layouts by continually sharing and sampling different techniques.

NEIL BESOUGLOFF

## **Contributing to Model Railroader**

We welcome contributions from our readers, including articles, photographs, and prototype drawings. For detailed information on submitting material to MR, contact our editorial associate Eric Stelpflug at 262-796-8776, ext. 583, or mrmag@mrmag.com. Model Railroader assumes no responsibility for the safe return of unsolicited material. We assume unsolicited material is intended for publication by Kalmbach Publishing Co. unless otherwise noted. We assume letters, questions, news releases, and club news items are contributed gratis.

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29008	Utah Parks Company - Cha	irtered

# News&Products



HO scale Richmond Tank Car 20,900-gallon tank car. These ready-to-run models from Athearn are on hobby shop shelves now. In addition to the two BNSF Ry. schemes shown above (Heritage 1 and Swoosh), the cars are available painted for the

Atchison, Topeka & Santa Fe; Celtran Inc. (CELX); Old World Transportation Ltd. (OWIX); and Quality Liquid Feeds (PTLX). They feature etched-metal platforms, metal wheelsets, and McHenry scale magnetic shelf couplers. They sell for \$27.98 each.

# HO diorama showcases museum's plans

Unlike most museum dioramas, which depict a scene from the past, the one built by volunteers for the Northwest Railway Museum in Snoqualmie, Wash., shows the future. Specifically, the 4 x 8-foot HO scale model shows the museum's Railway History Center, which is under construction.

The layout is normally displayed in the museum's restored 1890 depot, but the museum also displays it at train shows and other public events to build awareness of the construction effort, says volunteer Dan Olah. The display makes it

easy for the public to visualize the final appearance of the museum, Dan says.

The layout was funded and built by volunteers ranging in age from 10 to more than 70 years old. It depicts the museum's property and current structures as well as proposed future projects that will shelter the museum's collection of more than 70 pieces of historic railroad equipment.

The largest structure is now under construction. It's the 25,000-square-foot main exhibit hall, which has four display tracks.

The Conservation and Restoration Center, at lower right in the photo, was recently completed to handle maintenance on the collection. The 8,200-square-foot building is heated so equipment can be restored year-round.

Also in the works is a large train shed, which will include public access in an "open storage" format, and a replica two-story depot that will house a library, archives, and administrative offices.

Visitors are welcome. More information on the museum can be found at www.trainmuseum.org.

## >> Highlighted in this issue

- 10 Assorted N scale freight cars from Micro-Trains Line
- River Point Station HO scale Ford F-series pickup trucks
- 14 San Juan Car Co. O scale narrow gauge no. 6 turnouts
- Club cars
- 16 List of manufacturers in News & Products



Northwest Railway Museum volunteers Bob Miller and Dan Olah check out the HO layout they and other volunteers built to help publicize the construction plans of the museum in Snoqualmie, Wash. Photo by Richard Anderson Steven Otte



## Pacific Fast Mail's Don Drew Sr. dies

Donald H. Drew Sr., 79, owner of Pacific Fast Mail, has died. Drew, a resident of Edmonds, Wash., was a U.S. Army veteran who served in Korea. In 1966 he bought Pacific Fast Mail, which imports brass locomotives and cars, manufactures sound systems, and publishes railroad books. He is survived by sons Don Jr. and Sean; their mother, Karen; and one granddaughter.

### Calendar

June 18-20: 2009 O Scale National Convention. Student Union Building, Towson University, Baltimore, Md.

www.oscaleeast.com
July 5-11: 2009 NMRA National

Convention and National Train Show. Connecticut Convention Center, Hartford, Conn.

www.hn2009.org

July 5-11: 25th National Garden Railway Convention.

Denver Marriott Tech Center, Denver, Colo. www.2009ngrc.com

Aug. 4-8: 2009 National Association of S Gaugers National Convention. Mariott St. Louis Airport, St. Louis, Mo. www.nasg.org

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See new products and get modeling tips from associate editor Cody Grivno. You can now post your comments and questions online!

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Adding a DCC decoder to a locomotive











### Featured video article

In this series of video clips you'll see examples of common DCC decoder installations



See www.ModelRailroader.com/infostation

## News&Products



Assorted N scale freight cars. The latest releases from Micro-Trains Line Co. include a pair of Southern Pacific 50-foot flatcars with large pipe load, \$28.10; Western Maryland 50-foot ex-troop sleeper maintenance-of-way bunk car, \$19.55; CSX three-bay

American Car & Foundry Centerflow covered hopper, \$25.50; Canadian National 40-foot single-door boxcar, \$13.90; and Burlington Northern 50-foot covered gondola, \$19.35. The ready-to-run cars are all equipped with magnetic knuckle couplers.

### **HO** scale locomotives

Union Pacific gas turbine electric. With or without tender, two road numbers each. Five-pole skew-wound motor, window glazing with cab interior, and McHenry scale magnetic knuckle couplers. \$229.98 without tender; \$299.98 with. \$89.98 for tender only (without road number). June 2009. Ready-to-Roll. Athearn Trains

Wabash Electro-Motive Division F7 diesel locomotives. F7A or A-B set (two road numbers available). Individual window glazing, prototype-specific details, and magnetic knuckle couplers. A unit: Direct-current model, \$149.98; with Digital Command Control and sound, \$219.98. A-B set: DC model, \$299.98; with DCC and sound, \$439.98. June 2009. Genesis series. Athearn Trains

General Electric U18B diesel locomotive. CSX, Maine Central, Providence & Worcester (one road number), and Seaboard Coast Line. Four numbers each unless noted. Eight-pin Digital Command Control socket, etched-metal and

wire details, and magnetic knuckle couplers. \$139.95. Ready-to-run. InterMountain Railway Co.



Milwaukee Road Twin Cities Hiawatha Electro-Motive Division E7 diesel locomotive. Five-pole skew-wound motor with flywheels, detailed cab interior with crew figures, and Proto-Max magnetic knuckle couplers. A unit only: Direct-current model, \$159.98; with Digital Command Control and QSI Quantum sound, \$219.98. A-A set: DC model, \$299.98; with DCC and sound, \$429.98. Ready-to-run. Proto 2000 by Walthers

### HO scale freight cars

**16,000-gallon clay slurry tank car.** Englehard Corp. (ENGX) or Union Tank Car Co. (UTLX). Three car numbers per road name; also available undecorated. Metal grab irons, etched-metal platforms, and

McHenry scale magnetic knuckle couplers. \$29.98 per single car; \$89.98 per three-pack. June 2009. Ready-to-Roll. Athearn Trains

**70-ton covered hopper.** Central of New Jersey, Monon, Spokane International, and Western Maryland. Magnetic knuckle couplers and metal wheelsets. \$22.95. April 2009. Ready-to-run. Bowser

1,958-cubic-foot-capacity two-bay covered hopper. Clinchfield, St. Louis-San Francisco (Frisco), Milwaukee Road, Pere Marquette, Rock Island, and Western Maryland. Etched-metal running boards, wire grab irons and ladder rungs, and Kadee magnetic knuckle couplers. \$31.95. Ready-to-run. InterMountain Railway Co.



**50-foot automobile boxcar.** Unpainted urethane kit. Chicago & North Western (with Viking roof),



### HO scale 2008 Ford Fseries Super Duty pickup trucks and accessories.

River Point Station is releasing three new Ford pickups, some with dual rear wheels, as well as three accessory kits. Shown above are metallic green (with winch and long side toolboxes from toolbox kit), gloss red (seen with ladder kit), and twotone gloss black/metallic gold (with bright chrome trim kit and cross-bed toolbox from toolbox kit). The ready-to-run vehicles have rolling vinyl tires, detailed interiors, and opening tailgates, and sell for \$16 to \$18. The detail sets are sold painted or unpainted for \$6.50 to \$8.

Kansas City Southern, and Missouri-Kansas-Texas. Includes all details (except trucks and couplers) and proprietary decals. \$40 each, plus \$4 shipping for up to five kits. Add \$5 for AAR plastic trucks with metal wheelsets. Sunshine Models

# Bethlehem 4,000-cubic-foot-capacity three-bay hopper.

Burlington Northern (Colorado & Southern reporting marks), BNSF Ry. (oxide red with "swoosh" logo), Indiana RR, Milwaukee Road, Sidney & Lowe, Soo Line, and Wisconsin Central Ltd. (Burlington Northern patch scheme). Six car numbers each; also available undecorated. Metal wheelsets, modeler-installed wire grab irons, and magnetic knuckle couplers. \$99.98. Ready-to-run. Wm. K. Walthers Inc.

Continued on page 14

# THE MODEL OF THE MONTH!





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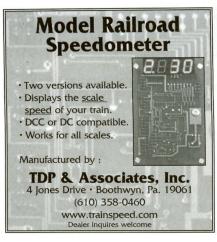
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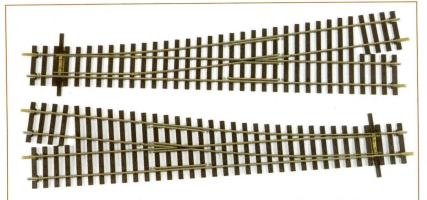


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Continued from page 11

### HO scale passenger cars

Streamlined lightweight passenger cars. California Zephyr, Canadian Pacific, Southern Ry., and Union Pacific. Baggage, RPO, diner, Vista-Dome, coach, and observation. \$19.98. June 2009. Ready-to-Roll. Athearn Trains



Metal-plated Amtrak Superliner cars. Superliner I: Coach-baggage, coach, sleeper, diner, and sightseer lounge (phase 2, 3, and 4 schemes). Superliner II: Coach, sleeper, diner, sightseer lounge, and transition sleeper (phase 4); coach-baggage and transition sleeper (phase 4b). Electrical pickup for interior lighting kit (sold separately), stainless steel finish, and magnetic knuckle couplers. \$59.98. Ready-to-run. Wm. K. Walthers Inc.

### HO scale details and accessories



Beer delivery trucks. New England Brewing Co. or Sea Hag IPA. Styrene construction and Connecticut license plates. \$18. Howard's Hobby

Mack "R" cement mixer trucks. A1 Ready Mix, Arrowhead, Franklin County, West Georgia Industries, and Westside. Detailed cab interior, positionable details, and detachable chute extension. \$24.98. June 2009. Athearn Trains

Assorted diesel details. Electro-Motive Division hood-mounted bells or Norfolk Southern/Southern Ry. nose-mounted bells: Etched metal, injection-molded styrene, and machined brass, \$8.49. Injection-molded styrene Spartan diesel cabs: EMD and General Motors Diesel Division styles, \$14.49. Fall 2009. Railflyer Model Prototypes

### N scale locomotives

Fairbanks-Morse H-15-44 and H-16-44 diesel locomotives. New paint schemes: Baltimore & Ohio;

Central of New Jersey (green and yellow); Erie Lackawanna (black and yellow); Kansas City Southern (black and white); Milwaukee Road (black and orange); and New York, New Haven & Hartford (green and orange "full balloon" scheme). New road numbers: Akron, Canton & Youngstown. Also available undecorated in four body styles. Directional classification lights and Accumate magnetic knuckle couplers. Directcurrent model, \$119.95; with Lenz Digital Command Control, \$159.95. June 2009. Ready-to-run. Atlas Model Railroad Co.

## Electro-Motive Division FP7 and F7B diesel locomotives.

Pennsylvania RR (Tuscan Red fivestripe scheme; four road numbers per A unit, two numbers per B unit) and Richmond, Fredericksburg & Potomac (four numbers per A unit, two per B unit). Etched-metal grills, wire handrails, and Micro-Trains magnetic knuckle couplers. A units \$119.95, B units \$84.95. Ready-to-run. InterMountain Railway Co.

### N scale freight cars

40-foot PS-1 boxcar. Detroit & Mackinac, Genesee & Wyoming, Northern Pacific, Reading Co., United States Army, and Virginian Ry. Two car numbers each; also available undecorated. Accumate magnetic knuckle couplers. \$11.95 (undecorated \$8.95). Trainman line. Atlas Model Railroad Co.

### **Club cars**



Ested, Warema & Brookny RR 40-foot boxcar. HO scale Athearn car custom decorated for freelanced Ested, Warema & Brookny RR. Four car numbers. InterMountain 33-inch metal wheelsets and Kadee no. 58 magnetic knuckle couplers. \$28.50 plus shipping and handling: \$4.50 for one car, \$6.50 for two, \$8.50 for three, \$10 for four. Send check or money order to: Ted Widenski, 220 W. Minnesota Ave., DeLand, FL 32720. Information: 386-738-2834.



Chicago & North Western covered hopper. Custompainted HO scale InterMountain Railway Co. car offered by the Amarillo Railway Museum. Ex-Rock Island patch scheme. Etched-metal running boards, Kadee magnetic knuckle couplers, and added side ribs. Readyto-run. \$31.95. Texas residents add 8.25 percent sales tax. Send check or money order to: Amarillo Railroad Museum, P.O. Box 31105, Amarillo, TX 79120-1105. Information: 806-376-6548.

Assorted ready-to-run hopper cars. 70-ton hopper: Reading Co. Class H21a four-bay hopper: Pennsylvania RR (circle keystone herald). Class GLa two-bay hopper: Baltimore & Ohio and PRR (circle keystone). Three car numbers each. Magnetic knuckle couplers. \$14.95. Bowser

Assorted freight cars. Detroit, Toledo & Ironton 40-foot boxcar with running boards; Montana Rail Link shallow-post wood-chip gondola; and Rock Island two-bay covered hopper: Six road numbers each; available in single, two, or three-packs; prices to be announced. TTX Maxi-Stack III five-unit double-stack well car: Two new road number sets; \$99.95. DeLuxe Innovations

### N scale passenger cars



Pullman-Standard fluted-side 10roomette, 6-bedroom sleeper.

New roadnames: Atlantic Coast Line; Canadian National; Louisville & Nashville; Pennsylvania RR; and Southern Ry. Blackened metal wheelsets, Accumate magnetic knuckle couplers, and electrical pickup for interior lighting kit (sold separately). \$34.98. Lighting kit, \$9.98. Readyto-run. Wm. K. Walthers Inc.

### N scale details and accessories

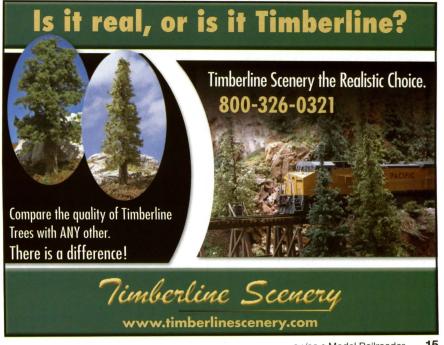
Assorted intermodal containers and trailers. Sea Star 53-foot corrugated container, two-pack. Matson 40-foot dual logo panel corrugated container, five-pack. APL (brown) 40-foot hi-cube corrugated container, five-pack. Hyundai 40-foot container chassis, two-pack. All prices to be announced. Third quarter 2009. DeLuxe Innovations

### O scale freight cars

55-ton panel-side hopper. Ann Arbor; Chesapeake & Ohio; Cleveland, Cincinnati, Chicago & St. Louis (Big Four); Pittsburgh & Lake Erie; and Wabash. Four car numbers each; also available undecorated. Die-cast metal chassis, sprung hopper doors, and magnetic knuckle couplers. \$67.95. May 2009. Ready-to-run. Atlas O







## **News&Products**

# Large scale details and accessories



1:32-proportion Caterpillar 247B2 multi-terrain loader. Diecast metal and plastic construction.

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HO or N scale Phol low profile switch stand with modern throw handle. Brass construction. Fixed handle and rotating flag. \$9.99. N.J. International Inc.

Scenery

Radical Flats digitally printed building flats. HO scale. Printed on heavy paper stock. Building sizes range from one to seven stories tall. \$6 per individual pack; Jefferson Street pack \$17, Commerce Street pack \$28, Radical Flats pack \$44. KingMill Enterprises

### **Scratchbuilding materials**

Laser-textured wood building material sheets. Brick texture, stone block, weathered stone block, random-course stone, stacked stone, stucco-textured sheet, and aged concrete with cracks and chips (multiple scales), \$12.99 per 6" x 24" sheet. Model Tech Studios

### **Books**

Indiana University Press books.

The Duluth, South Shore & Atlantic Ry. by John Gaertner. 368 pages, 135 photos and 35 maps. \$49.95. Iron Rails in the Garden State by Anthony J. Bianculli. 208 pages, 52 photos and one map. \$39.95. Indiana University Press

### **Manufacturer listings**

Athearn Trains

1550 Glenn Curtiss St. Carson, CA 90746 310-763-7140 www.athearn.com

Atlas Model Railroad Co.

378 Florence Ave. Hillside, NJ 07205 908-687-0880 www.atlasrr.com

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378 Florence Ave. Hillside, NJ 07205 908-687-9590 www.atlaso.com

Bowser

P.O. Box 322 Montoursville, PA 17754 570-368-2379 www.bowser-trains.com

DeLuxe Innovations

9 Whippany Rd., Unit 10 Whippany, NJ 07981 973-887-3919 deluxeinnovations.com

Howard's Hobby

116 Silver Hill Rd. Ansonia, CT 06401 www.howardshobby.com Indiana University Press 601 N. Morton Street Bloomington, IN 47404

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InterMountain Railway Co. P.O. Box 839 Longmont, CO 80502 303-772-1901 intermountain-railway.com

KingMill Enterprises 203 Camellia Dr. Charlottesville, VA 22903

Charlottesville, VA 22903 434-979-7280 www.kingmill.com

Micro-Trains Line Co. P.O. Box 1200 Talent, OR 97540 541-535-1755 www.micro-trains.com

Model Tech Studios P.O. Box 1497 North Hampton, NH 03862 603-964-5995

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San Juan Car Co. P.O. Box 1028

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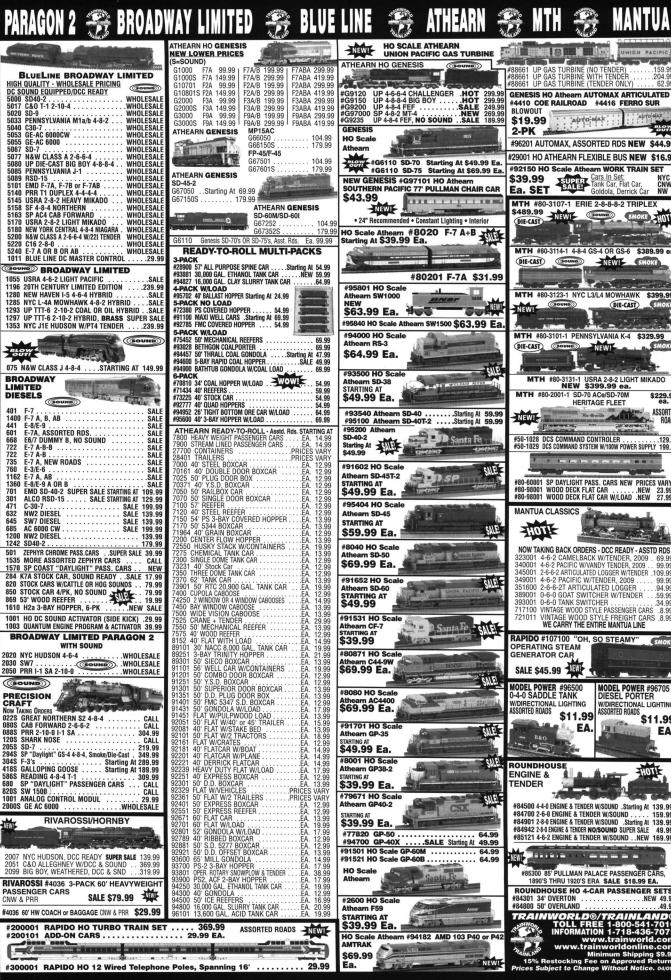
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# Railway Post Office



By adding details, Gerry Leone made this scene more realistic. See more of Gerry's work in the January and February issues of *Model Railroader*.

### A lived-in look

Gerry Leone's attention to detail in the town on his Bona Vista RR, featured in the February 2009 issue of *Model Railroader*, was excellent. The photo above shows a great detail of "junk" in the backyard. Where did Gerry get those cinder blocks?

Bill Parker Fort Knox, Ky. [I know from experience that scratchbuilding cinder blocks is a near-thankless job, but there's almost no better way to show "junk that's been tossed out back" than cinder blocks.

The ones pictured are made by Funaro & Camerlengo and are listed on its website (http://www.fandckits.com/) under "HO details." – Gerry Leone]

### Blind drivers on the PRR I1sa

In reading Jim Hediger's review of the PCM/BLI I1sa in the February 2009 issue of *Model Railroader*, I noticed that an error had crept in.

Jim stated that the model incorrectly has flanges on drivers 2 and 4, while the prototype only had flanges on drivers 1 and 5. While Jim's comment is correct for the I1s as built, the PRR modified these locomotives by adding flanges to drivers 2 and 4 in the mid-1930s.

The reason for this was to help keep the drivers on the rails in tight radius curves. Since the PCM/BLI model has details applied in the mid- to late 1930s and the 210F82A (long distance) tender, which was used after WWII, it is completely appropriate for the model to have blind drivers only on the center axle. Many previous models of this locomotive with transition-era details incorrectly use multiple blind drivers. And while it is a minor additional point, the model has the correct left-hand lead,

which has been missed on many prior models.

Bruce F. Smith Auburn, Ala.

### Virtual Rail-ality

As managing editor David Popp points out in his guest editorial in the February issue of *Model Railroader*, maps.google.com is a good reference if one is seeking current information, but it's not good for historic information unless the locale has not changed in the past 50 years.

The USGS (United States Geological Survey) Web site has hundreds of topographical maps available for free downloading. The Web site is: http://store.usgs.gov.

For those seeking more modern information, I've found a source of better-quality aerial photographs than those available from Google Maps. Almost all county Web sites have some type of GIS (Geographic Information System) feature, which allows access to information about

county property records. I have seen some aerial images of railroad tracks that are so good I can see the individual crossties.

John Henderson Winston-Salem, N.C.

### **Puffer Bridge Lines**

It was a delightful surprise to find Seth Puffer's layout in the February issue of *Model Railroader*.

As I was enjoying photos of his Puffer Bridge Lines, it reminded me of his Pacific Union Fast Freight Electric RR, an equally appealing layout that was featured in the May 1995 issue of MR.

On both layouts, Seth's forte is his attention to detail. I find myself studying the level of marvelous detail in every scene.

> John S. Beers II Ocean Springs, Miss.

### Corrections

The HO scale Pullman-Standard PS-2CD 4,740-cubic-foot capacity covered hopper from Tangent Models that was listed in January's News & Products is not available painted for Western Pacific.

The Milwaukee Beer Line track plan on page 46 in the January 2009 *Model Railroader* contained errors for the location of North Avenue and the separation line that runs along it for the bottom layout section. The corrected illustration is shown below. – *Ed.* 



Illustration by Rick Johnson

Comments, suggestions, and additional information on MR articles and departments are welcome in this column. Every comment will be read, but not all can be printed or answered. Make your statement in 300 words or less, and send it to Railway Post Office, *Model Railroader* magazine, P.O. Box 1612, Waukesha, WI 53187, or e-mail rpo@mrmag.com. Please include your name, city, and state.

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Railroads often use converted passenger cars as portable classrooms. This one hosted safety meetings for Chessie System's employees. Senior editor Jim Hediger photographed it at Willard, Ohio, in 1980.

# Traveling classrooms keep railroaders up to date

Instruction cars played an important role in educating employees about the rules they must follow to work safely. These rolling classrooms made regular visits to all the major terminals of a railroad to host mandatory classes on operating rules and safety procedures. All operating department and shop employees were required to attend the sessions to maintain their working qualifications.

Depending upon the subject matter, these cars were manned by a rules examiner or a safety supervisor who presented the program and administered the written tests that usually followed. These exams ensured that the employee understood the presentation and provided a record of his participation. A passing grade was required for continued employment.

The instruction car shown above is a modified heavyweight passenger car with most of its windows covered. Former parlor cars were preferred for this use because the large main room could become the classroom and the original drawing room accommodation could be easily converted into living quarters for the instructor. Some conversions included a heater in the vestibule so the car could be kept comfortable at remote locations. These cars were often fitted with 110-volt light-

ing and outlets powered by a heavy extension cord connected to any convenient grounded outlet.

In more recent times, railroads have built a number of specialized instruction cars. Since Amtrak came along, many of these newer, and much more sophisticated, conversions have been built into surplus lightweight cars.

The new breed of instruction cars may contain computer-driven locomotive simulators to train new engineers, a cutaway diesel engine, or other mechanical systems for demonstration purposes.

Air brake instruction cars date back to the wooden car era, and they're often built into former baggage cars. These cars have a complete train air brake system mounted on the walls to demonstrate how everything functions.

Building an instruction car for your railroad shouldn't be very difficult. If you start with a passenger car, it's mostly a matter of making logical modifications for the car's new job. The windows are usually covered to reduce vandalism and make a dark room where movies or videos may be shown. Most instruction cars are painted in their owners' passenger colors, but some have distinctive paint schemes to enhance a safety message, such as the car shown above.

– Jim Hediger, senior editor



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# **Quantum Chuff** with Progressive Cutoff

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### by Fred Severson

### Introduction

**Steam Boiler** 

There are two ways to control the power from a prototype U.S. steam locomotive, either the Throttle or the Johnson bar. The Throttle controls the amount of steam available and the Johnson bar controls the percentage of the piston stoke that steam is admitted into the steam cylinder. This percentage is also called Cutoff. The principle behind Cutoff is illustrated below in a simplified cut-away diagram of a steam cylinder. The valve at the top does double duty in most steam locomotives since it governs both the injection of steam from the boiler and the venting of steam from the cylinder.

> The other diagrams below show the progression of the piston as it moves from the left to the right. Steam is injected at "A" which cause the piston to mov continually to the right until the value is moved over the opening at "B", cutting off or blocking additional steam from entering the cylinder. The cylinder continues to move as shown in "C" but the steam pressure is reduced from the boiler pressure simply because the cylinder volume has increased.

> > In other words, Cutoff controls the point during the travel of the piston where additional full pressure steam is prevented from entering the cylinder.

If the engineer uses the Johnson bar to set late cutoff, then full steam pressure is applied during the entire stroke of the piston. If he sets Cutoff early, then full steam pressure is only available at the start of the piston stoke. By changing the Cutoff, the engineer controls the force delivered to the locomotives wheels.

Cutoff is usually expressed as a percentage of the piston stoke. A 75% Cutoff means that full pressure steam is injected for 75% of the piston stoke. A 30% Cutoff means that steam has only been injected for 30% of the piston stoke. Because the control valves are opening and closing during the travel of the piston and the piston does not completely fill the cylinder area at the extreme limits of its motion, early Cutoff usually ranges from 15%-25% and late Cutoff from 75%- to 85%

The steam exhaust cycle is shown in Figure 3.

During the return cycle of the steam piston, the value opens exposing the steam in the cylinder to the outside air. The steam vents mainly from its own pressure but also because the piston moves to the left pushing the excess steam out the exhaust port. If a high percentage Cutoff was used, the steam is at maximum pressure at the end of the piston stoke and produces the familiar "Bark" heard when a steam locomotive starts out with a heavy load. If a low percentage Cutoff was used, the steam pressure is low at the end of the piston stoke which produces a much softer, wetter sound when the exhaust value is open. Engineers often use the Johnson\*\*bar as the primary power control for a steam locomotive.

Much of the details of how valve systems work on a steam locomotive are left out in this discussion since we are primarily interested in Cutoff and how it effects the operation and sound of a steam locomotive.

The Quantum Sound-Of-Power™ Chuff with Progressive Cutoff effect is based on the physical equations that describe prototype steam locomotive operation. In our case, we treat the DCC throttle as a Johnson \* bar. Low DCC throttle settings produce minimum Bark (low percentage Cutoff) and high DCC throttle settings produce maximum Bark (high percentage

We also have two modes for Sound-of-Power (SOP) operation in our Quantum system. Classic Throttle SOP and Semi-Automatic (SOP).

In Classic SOP, the DCC throttle generates SOP from its lowest Bark to its highest Bark linearly as the speed steps range from its lowest value (1) to its highest value (126). In Semi-automatic SOP, the user sets the DCC throttle at the value he wants but the "Bark" or Cutoff is automatically set higher during acceleration and levels off to the value set by the operator as the train reaches its steady-state speed. This represents the engineer setting the Johnson\* bar to higher Cutoff, which is required to accelerate the train and then backing off to lower Cutoff as the train reaches the desired speed.

During deceleration, when the DCC throttle is turned down, the Cutoff is set lower until the final speed is approached whereupon the Cutoff or Bark increases to the correct value for that throttle setting. Again, this represents the engineer setting the Johnson \* bar for very low Cutoff until the final desired speed is obtained where he then increases

Cutoff to maintain speed. If the throttle is brought down to very low speed steps, the volume remains at or above a minimum setting that is appropriate for the 15%-25% minimum Cutoff value. If the DCC throttle is set to zero, then the chuff sounds shut off completely. This would represent the engineer setting the Johnson \* bar to the Neutral position\* where no steam is injected into the steam cylinders.

### **High Speed Chuff**

High-speed chuff on the prototype is characterized by a smooth blending and overlapping of the chuffs with variation in volume and timbre. Our models capture this quality as the chuffs change from highly distinct individual chuffs at low speeds to a contin roar that increases in rate over the entire high-speed range. Gone are the limited chuff range and irritating machinegun-like pounding at high speeds that characterize many model train sound systems. And changes in Cutoff or Bark with the throttle for the Quantum System are still apparent even at these higher speeds.

When you experience the new Quantum Chuff with progressive Cutoff, we suggest you leave the sound system in its default Semi-automatic setting and set your locomotive to a reasonable value for CV3 and CV4 (100 or so) to allow more prototype-like response to the throttle. When you start out with the throttle set high to accelerate your locomotive, you will hear the distinctive labored Bark as it starts out and accelerates. The Bark will decrease as it reaches steady-state speed. Since our SOP is based on the actual physical equations that govern the operation of steam locomotives, the Bark or Cutoff is continuously progressive with throttle and speed just like the prototype. Hence, you will not hear the Quar Chuff abruptly change from one chuff sound recording to another as Cutoff changes.

### Rod and Valve Clank

Quantum Revolution (QR) steam sound sets also model the sounds of Side Rod Clank. These sounds are apparent on prototype locomotives when the throttle or Cutoff is low and there is less force on the connecting rods. When the throttle is decreased on Quantum Revolution, valve gear and side Rod Clank can be heard as the locomotive decelerates. Rod Clank will start to occur as the speed decreases below a certain level and is quite apparent as the locomotive slows to a stop. If the throttle is not decreased all the way, then the Rod Clank will be heard during deceleration until the model reaches its steady state speed. This is consistent with prototype operation where the increased force to maintain steady-state speed applies more force to the connecting rods, which reduces its bearing slack and hence reduces the clank sounds. It is easier to hear the Rod Clank on the model in Semiautomatic SOP since the chuff volume is usually much lower during deceleration. If you are operating in Classic Throttle SOP, the Rod Clank will be more audible compared to the chuff sounds if you turn the throttle down to very low settings. Rod Clank rate on the Quantum System decreases realistically with locomotive speed and is synchronous with any chuff sounds that maybe present.

### **Power Loading**

Quantum Sound-of-Power is not directly affected by changing values of inertia (CV3 and CV23). Intuitively it would seem that the more simulated load we apply to our locomotive, the harder it should work. We have all seen prototype videos or have experienced the raw power of a real slow-moving steam locomotive working hard to accelerate its heavily loaded train so why not do the same in the model. However, the reason the

prototype sounds like it is working hard is because the throttle is wide open and at maximum cutoff. It is moving slow because even at full throttle it is having a difficult time moving its load.

The same should also be true of the model train if it was loaded with many cars. The difference is that model locomotives are usually way over-powered compared to the prototype and the rolling stock is often prototypically too light and roll too easily. If the model locomotive can pull its full allotment of cars without slipping, it can usually get up to near full speed on level track at

To address this issue, we have added a new feature called "Power Loading" which can be enabled in CV 56.4 under Quantum Configuration. When you select Regulated Throttle Control (RTC) with Power Loading, the more inertia you set in CV3 and CV23, the slower your locomotive will operate at the same Figure 3

throttle settings; and it will take more throttle to get it moving. If you have very little inertia set for CV3 + CV23, there is little effective "Power Loading". But set CV3 + CV23 sum at a higher value (say 100 to 380), and your locomotive will know there is a huge load behind it. Turn the throttle up and it will start moving at a much higher setting and at full throttle, it will move slower and the Sound-of-Power and Bark will be at its extreme limit.

\* The Johnson bar is defined as a hand lever with multiple selection positions with a spring-loaded squeeze handle on the lever so that only one hand is needed to release the clutch, move the lever, then reengage the clutch into one of the selection positions. The Johnson bar on U.S. steam locomotives also controls the revering the locomotive. Foreign steam locomotives may not use a Johnson bar to control reversing or Cutoff.

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## **Information Desk**

Since your Ohio Southern is a freight-only railroad, what sort of passenger equipment do you use for occasional fan trips and inspection tours?

Rob Wellman, Lima, Ohio

It doesn't happen very often, but the occasional passenger trains that operate on my HO scale Ohio Southern follow my favorite prototype's lead. Whenever the real Detroit, Toledo & Ironton operated one of its rare passenger trains, it rented the necessary equipment from neighboring companies.

In the Detroit area, the passenger cars usually came from the Chesapeake & Ohio or Pennsylvania, while the Baltimore & Ohio supplied cars for south-end trips. The entire consist usually came from one source, but longer consists could have cars from several sources.

The DT&I didn't own any passenger diesel locomotives, so it also had to borrow a steam generator car or motive power that could operate the train's steam-operated air conditioning or heat during the trip. Electro-Motive Division units were preferred, since the DT&I's engine crews were most familiar with them.

Since my railroad is in southern Ohio, I operate similar DT&I style trains using a small assortment of Walthers B&O cars (heavyweight coaches and a baggage car), a few C&O lightweight coaches, and a couple of PRR coaches. One or two B&O passenger Geeps serve as the locomotives, and an OS business car usually carries the markers at the end of the train. – J.D.H.

I model the Norfolk Southern's Pocahontas Division and have three of the big Kato HO scale SD80MAC models. I'm wondering why the prototype's SD80MACs only operate in Pennsylvania, as I've never seen pictures of them operating anywhere else? Aaron Bryant, Cedar Bluff, Va.

Since the Norfolk Southern has only 17 of these powerful 5,000-hp units, it makes sense to keep them working on the railroad's toughest mainline grades. In addition, NS probably has all of the SD80MACs assigned to a single maintenance base. This is a common method large railroads use to reduce the parts inventory required to keep the fleet running. – *J.D.H.* 

I model in HO and am using code 100 track. My question is what size and color of rock ballast would look right?

Frank Sliwinski, Philadelphia, Pa.

There's no single answer to this question. Mainline ballast is usually a uniform-sized, heavy, crushed rock, preferably granite or limestone. Secondary tracks and yard areas get cheaper mixtures of different sizes and types of rock. Sidings and spur tracks were often ballasted with cinders from steam locomotives or crushed slag that's a by-product from steel mills.

The size and profitability of a railroad enters into its choice of ballast. Smaller companies tend to use less expensive, locally produced ballast, while the class 1 railroads (BNSF, CSX, Norfolk Southern, Union Pacific, and others, buy the best and may haul it great distances.

As for color, that's determined by the source of the ballast. Some railroads own quarries, which may produce a unique color. Otherwise, the ballast is whatever color the current supplier has available. You may want to take a closer look at the color the next time you're near your favorite railroad.

For an HO railroad, we normally use a medium grit to simulate heavy mainline ballast, with mixed finer sizes to look like less expensive rock in the sidings. Fine dark gray, black, and brown N scale ballast looks like the cinders that were used to ballast secondary tracks during the steam era.

Light gray ballast, like associate editor Cody Grivno used on our Wisconsin & Southern project (January through April 2008 issues of *Model Railroader*), makes the most realistic looking ballast. White limestone tends to look too bright in photos. – *J.D.H.* 

Send your questions about prototype railroading to Information Desk, *Model Railroader* magazine, P.O. Box 1612, Waukesha, WI 53187, or e-mail proto@mrmag.com. We regret we can't answer all the questions we receive.



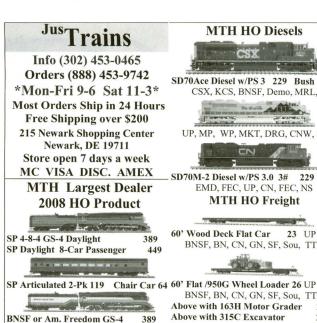
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Backyard Barbeque

# Can't paint backdrops? Try spun polyester clouds

If you want clouds, skip the paint and try Buffalo Snow, a decorative product made for Christmas displays and decoration (see the Web site at www.buffalobatt.com). This 100 percent spun polyester product can be used to create any sort of cloud formation.

I discovered this method of modeling clouds as I tried to paint the backdrop for my layout. No matter how hard I tried, my hand painted clouds lacked depth and dimension, and they left the sky looking flat.

The solution occurred to me as I was browsing past issues of *Model Railroader* and realized how much depth and realism can be achieved by using kitbashed shallow relief buildings along the wall. Why not try the same thing with clouds?

I found Buffalo Snow, which comes in a 16-ounce package, at a local craft store. A package the size of a bed pillow cost about \$5, and it contained enough material to create clouds for my entire 100-square-foot backdrop.

Working with the spun polyester is a snap. All I had to do is pull off a chunk of the polyester about the size I wanted and tease it into shape. Having some cloud pictures to look at definitely helps. However, the material is easily shaped into a thin, fleecy texture, so the cloud quickly emerges. And if I don't like the first effort, I just pull the material into another shape.

I position the cloud and mark its location and shape with a few light pencil marks on the wall. Next, I use an inexpensive brush to apply dabs of full-strength white glue to the outlined area of the



Joe Winkelmann uses stretched pieces of white spun polyester that he shapes and glues to the painted backdrop to simulate fleecy clouds around his HO layout.

painted wall. Then I press the cloud onto the glue and hold it in place for a few seconds until the glue sticks to the polyester.

After the glue sets, I gently pull thin strands of the polyester away from the body of the cloud to create a wispy, see-through appearance so the blue shows through it.

When I found that one of my clouds seemed too large and dense in my sky, I simply pulled off a third of the material and wiped off the glue with a damp cloth.

I was able to create a stormy effect by lightly spraying some gray and black paint onto my clouds before I glued them on the wall. And by teasing strands from the bottom of the cloud, I was able to simulate a rain storm.

Perhaps the best part is that these clouds add some dimension and they're easy to install. – *Joe Winkelmann, Strasburg, Va.* 

Your Milwaukee Road Beer Line is a timely article for me, but I'd like to know if it would work in N scale on half-size benchwork? Any suggestions?

John Walsh, Nogales, Ariz.

Building an N scale version on half-size modules would probably work, but my inclination would be to build it on either the same size or 3/4 size sections. This would allow you to take advantage of the smaller scale to use wider curves, provide additional scenery space around the structures, expand the yard, and lengthen some of the industrial spurs. The wider curves would make your trains look more realistic. – *Jim Hediger, senior editor* 



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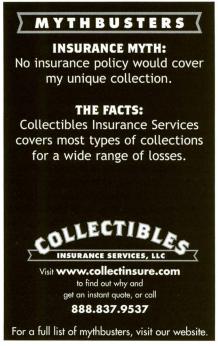


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# **Workshop**

Here's a trick I use to speed up the installation of my Tortoise switch motors. Instead of trying to feed a short actuating wire up through the tiny hole in the switch rod from below, I substitute a much longer length of .025" piano wire inserted from the top.

I place a small flag of masking tape on the top end to serve as a stop, and then drop the wire through the small hole in the switch rod. Working from below, I bend the wire to shape and attach it to the switch machine with a screw as directed in the Tortoise instructions. Then I position and secure the switch motor to produce the proper throw. My last step is to trim off the excess actuating wire. – Thomas Noblitt, Sevierville, Tenn.

Bottle collar. Thanks to years of experience, I can testify to the fact that placing an open bottle of paint or cement on the workbench is an invitation to disaster. No matter how careful I am, sooner or later I always forget it's there and knock the bottle over, usually at the worst possible moment.

To be honest I'd gotten quite good at grabbing the falling bottles of paint before much spilled, but it doesn't seem to be the most cost effective way of handling my various hobby paints.

To avoid such catastrophes, I now use scraps of 1" or 2" foam insulation board, cut about 4" square with a hole in the center that's a tight fit for the bottle.

I've done extensive tests, trying to tip them over, and can safely say



Lionel Strang fits a simple collar of extruded-foam insulation board around a bottle of paint to greatly reduce the possibility of accidentally spilling the open bottle.

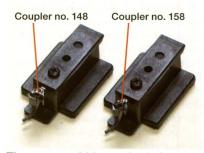
that knocking over a small bottle of paint sitting in a 4" diameter base is almost impossible. *Lionel Strang, contributing editor* 

### Kadee insulated coupler gauge.

Here's a new version of a familiar tool modelers have used for years to quickly check magnetic knuckle couplers on cars and locomotives. It does the same jobs Kadee's original no. 205 metal gauge did, but this new no. 206 gauge is made of plastic. This allows it to be used on layouts with live DCC (Digital Command Control) systems without shorting out the system.

Like its predecessor, this new gauge sits on the railheads and measures track gauge, as well as the National Model Railroad Association standard coupler height. It also has a small step to check the vertical clearance of the uncoupling lever (air hose), the mounting height of between-therails uncoupling magnets, and the coupler box mounting height.

The insulated gauge must be assembled. This only takes a few moments, as it's a matter of slipping your choice of coupler into



The new no. 206 coupler height gauge from Kadee has a plastic body so it can be used to check rolling stock on HO layouts with live DCC (Digital Command Control) systems. Each gauge accepts either an original or a scale-size Kadee knuckle coupler.

place, adding the lid, and securing it with a small screw. The gauge is designed for use with either a Kadee no. 148 whisker coupler or the smaller no. 158 scale size coupler, both of which are included in the envelope. – *J.D.H.* 



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## Step by Step



Rolling stock, signs, vehicles, and other details can help convey a sense of time and place. Cody Grivno shows some of the details we added to the Beer Line to emphasize our circa 1947 Milwaukee Road layout.

# Detailing scenes for a time and place

There are many ways you can convey a sense of time and place on your model railroad. The most obvious is with locomotives and rolling stock. For example, on our circa 1947 HO scale Milwaukee Beer Line layout (see page 40), we have Milwaukee Road Fairbanks-Morse H-10-44 diesel locomotives, ribbed-side cabooses, and 40-foot boxcars. You can further reinforce

the theme of your model railroad with structures and lineside details.

Many railroads have distinct architecture. On page 36, you can see a Milwaukee Road octagonal gateman's tower. These structures, as the name suggests, housed gatemen who operated pneumatic crossing gates. Examples of the railroad's distinct switch stand targets are shown on that page too.

Figures can also give visitors a clue to the period you're modeling. See the opposite page to learn more about the fashions in the late 1940s.

These are just a couple of ways we established the theme of our Milwaukee Road Beer Line project layout. As you're detailing your model railroad, look for opportunities to give your scenes a sense of time and place. MR



As we were studying prototype photos of the Beer Line, it was apparent we'd need plenty of ribbed-side cabooses and 40-foot boxcars. Fortunately, Walthers had just released models of the caboose, and Rib Side Cars had several versions of the boxcar.

Since our layout is set in 1947, we weathered the equipment based on how many years it would have been in service. The railroad-manufactured ribbed-side boxcars and cabooses were built starting in 1939, so we applied a moderate amount of weathering to them.



The H-10-44s were fairly new in 1947, so I lightly weathered these units. I started by using an airbrush to spray the trucks and fuel tank with thinned L&N Gray (about 10 drops of paint to ½ ounce 70 percent isopropyl alcohol.)

Once that had dried, I applied thinned Steam Power Black around the exhaust stacks (as shown in the photo above) and on the journal boxes. If possible, use prototype photos from the period you're modeling as a guide for weathering.



**People dressed much differently** back in the late 1940s than they do today. Men typically wore white dress shirts, neck or bow ties, dress pants, hats, and sport coats. Most women wore dresses or blouses and knee-length or longer skirts.

The colors were also conservative. Blue, black, brown, dark green, and gray were the order of the day. The figures shown in the photo at left are from Preiser, but others are available from Bachmann, Life-Like, Merten, Model Power, Vollmer, and Woodland Scenics, among others.



Vehicles can also reinforce a layout's era. Our layout is set in 1947, so this task was a bit more difficult, as many of the HO scale vehicles offered are based on 1950s and '60s prototypes. However, our editor and resident car guy, Neil Besougloff, found some periodappropriate vehicles, including a 1936 Ford Fordor Sedan from Classic Metal Works (left) and a 1930 Ford Model A from Athearn. There are few 1940s HO scale tractor-trailer models, so we stretched the envelope a few years on our big rigs.

Though HO scale license plates are tiny, they add to the overall appearance of the vehicles. In the late 1940s, Wisconsin had rounded-corner plates, which Neil found photos of online.

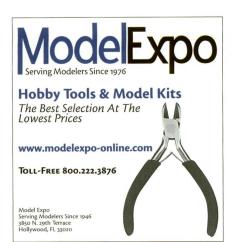
Using Photoshop Elements 4.0, associate editor Steven Otte reduced the plates to HO scale and made color printouts. Then I cut out the plates with a sharp hobby knife (a fresh blade reduces the chances the paper will tear) and attached them to the vehicles with Testor's clear-parts cement.



From emblems on buildings to the names of businesses, signs provide a visual clue to the time and place being modeled. Probably the most recognizable sign on the Beer Line was the Schlitz emblem on the company's elevator. This emblem, and later versions, frequently appear in prototype photos. Steven describes how he made the decal on page 45.



Smaller signs, such as the one on Wolski's Bar, a Milwaukee icon, can be made using a word processing program. Just select the type size, style, and color; make as many signs as you need; and print them out. You could even print the signs on colored paper if you want some variety. Attach the signs with spray adhesive or double-sided tape.



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# Step by Step



Busy grade crossings in Milwaukee were protected by pneumatic gates operated by a gatekeeper housed in a nearby tower. Though this style of gate was common throughout the United States, the twotone gray octagonal tower was an architectural style unique to the Milwaukee Road. The gates and the tower are both from Walthers.



The Milwaukee Road also had distinctive switch stand targets. The chevrons were used on mainline stands; the ovals were used in yards and at industries. I used Details West stands since Precision Scale Co.'s no. 31471 weren't available when we built the layout. The peeland-stick targets, attached to .010" styrene, are from Depots by John.

In order to keep the targets positionable for photographs, I put a dab of Woodland Scenics Scenic Accents glue in the hole at the base of each stand. Once the glue turned clear, I slid the mast into the hole. I then carefully attached the stand to the headblocks with mediumviscosity CA, keeping the adhesive away from the mast.



In an aerial photo of Humboldt Yard, we noticed a grounded singlesheathed boxcar body being used for storage. This building fit perfectly between the tracks and the edge of the layout.

Our starting point for this building was an Accurail 40-foot singlesheathed boxcar kit. Managing editor David Popp trimmed off the stirrup steps and cut a piece of .040" styrene sheet to serve as the car's floor. Then I sprayed the model with Rust-Oleum Gray Automobile Primer.

I let the paint dry for 24 hours, and then used a foam paintbrush to apply an India ink wash (two tablespoons ink to one pint 70 percent isopropyl alcohol.) After spraying the boxcar with Testor's Dullcote, I attached it to the layout with full-strength white glue.

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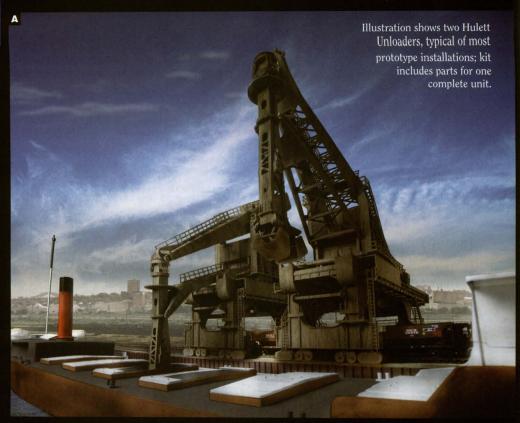
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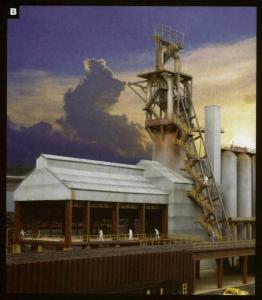
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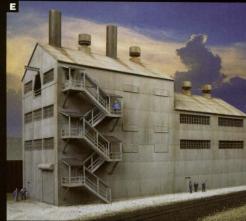
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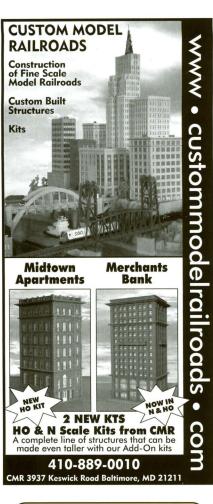


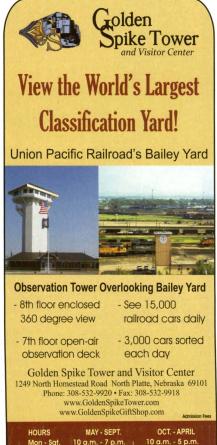












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A Milwaukee Road Fairbanks-Morse H-10-44 switcher leads a short train past the Schlitz Brewery elevators. This month, Model Railroader staff members describe how they modeled signature structures for the Beer Line project layout.

### **Build the Beer Line**



PART FOUR

Signature structures complete our

HO scale project layout

By Cody Grivno • Photos by the author

tructures play an important role in establishing the theme of a layout, and we had plenty of buildings to choose from on the Beer Line. However, with only a 4 x 12 foot space to work with, we had to be selective when picking structures. The breweries were a must, but our project layout has several other buildings that help establish our Beer Line's identity.

The majority of the structures on the layout were either kitbashed or scratchbuilt. Andy Sperandeo, Steven Otte, and Jim Hediger will show you how they kitbashed key structures for the Milwaukee Road Beer Line, including a freight house, grain elevators, and a wedge-shaped four-story warehouse.

Luck was on our side in a few instances as commercial structures were available. The scale house (opposite), Humboldt Yard office, Kalmbach Publishing Co., and Walthers (all three on page 59) were all available as kits or factory built.

With the structures in place, the Beer Line is complete. Be sure to read this month's installment of Step by Step (page 34) to see how we detailed our project layout. MR

#### **Build the Beer Line series**

January 2009: Track plan, layout configurations, and benchwork February 2009: Roadbed, track, wiring, and Bachmann Dynamis Digital Command Control March 2009: Ballast, scenery, streets, and the Milwaukee River Coming next month: Andy Sperandeo and David Popp show you how to operate the Milwaukee Road Beer Line

#### **SCALE TRACK**



The Walthers scale track and scale house kit is based on the Milwaukee Road prototype shown in the inset photo by George Drury, near the Schlitz elevator on the Beer Line. Paint and a few simple additions make it even more realistic.

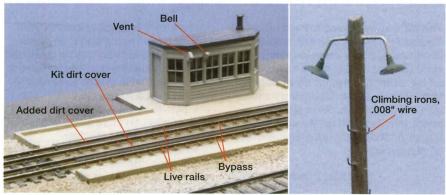
The Walthers track scale kit (no. 933-1399) is a fair representation of the track scale and scale house on the Beer Line. Following a prototype photo I added a couple of simple details to the scale house: an electric signal bell made from scrap-box parts and a vent carved from styrene strip. Then I painted it gray with a gray-black roof.

The gantlet track on the molded scale base includes four rails, two for the bypass track that carries engines and cars not being weighed past the scale, and two for the "live" or scale track itself. The rails aren't included, so I stripped some from Peco flextrack.

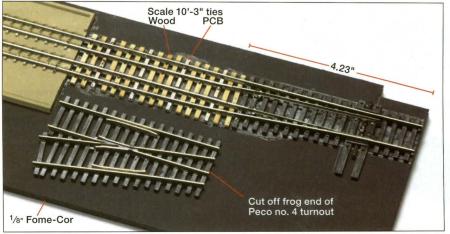
The kit includes two dirt covers to fit beside the live rails, but there should be four, one on each side of each rail. I installed the kit parts, which are fairly thick, outside the live rails and used .015"-thick styrene strip to add dirt covers inside them. The thin styrene won't interfere with wheel flanges.

For the approach tracks I cut down a pair of Peco no. 4 turnouts to make the gantlet switches, then continued the approach tracks over a mixture of wooden and printed-circuit board (PCB) ties glued to a base of 1/8" Fome-Cor. I soldered the rails to the PCB ties and spiked them to the wood ones.

As a final detail, I added a tall pole with a pair of shaded lamps next to the scale house to illuminate car markings at night. – Andy Sperandeo



Andy added a vent carved from styrene and a bell made from leftover diesel parts to the scale house. The Rix Products pole has Grand Line lamp shades.



Andy cut down Peco turnouts to make the gantlet switches. He glued the switches and approach-track ties to a Fome-Cor base cut to fit on the layout.

#### THE MILWAUKEE ROAD FREIGHT HOUSE



The Milwaukee Road's Juneau Avenue freight house is represented on the Beer Line by this structure Andy Sperandeo built mostly from Design Preservation Models

modular wall sections. Finding that DPM didn't have the single-window panels he wanted for the second story, Andy molded his own with casting resin.

The Milwaukee Road freight house at Juneau Avenue and the Milwaukee River was a long, narrow, two-story brick building. It had an office fronting on the street and freight doors serving both rail cars and trucks along its west side. It stood on the north side of the street with its office on the south end, but its location is by necessity reversed on our layout.

Roof support

Fire wall

Cross brace

Wall bracing, styrene strip cemented to form angles

Here's the bracing Andy installed to

I had few prototype photos to work from, and tried to make that an advantage. All I'd have to do was re-create the building's general shape and textures to have a reasonable model. Here are the features I set out to capture:

- Two-story brick construction with parapet walls on three sides and a roof sloping east toward the river.
- Red brick facing for the street level of the office, the rest of the building of less-expensive "cream city" brick, a local product with a buff color.
- Painted signs reading "C.M.ST.P.&P.
   FREIGHT OFFICE" facing the street as well to be seen from the east and west.
- A single second-story window over each freight door bay.
- Roof details to match an aerial photo, including a fire wall, ventilators, and access hatches.

Modular modeling. To save time and since I wasn't too concerned about prototype dimensions, I built the freight house from Design Preservation Models (DPM) modular wall sections:

**North wall** (office front), one 30101 for the ground floor and one 30130 for the second story.

**East wall** (river side), ground floor, one 30134 and eight 30104; second floor, one 30130 and eight 30133.

**South wall**, one 30136 for the ground floor with one 30133 above.

West wall, ground floor, a 30104 and eight 30135; second floor one 30130 and eight – uh-oh, no DPM part works!

I thought having a single secondstory window above each freight door bay was worth some extra effort, since it was one of the few distinctive features I could see in photos. "Casting your own walls," opposite, tells how I made a master from a couple of extra DPM wall sections, then made a silicone rubber mold to cast the single-window wall sections with two-part resin.

Once I'd gathered or cast all the wall sections I needed, I assembled them pretty much according to the DPM instructions. The main difference was that I had to use cyanoacrylate adhesive (CA) instead of plastic cement to join plastic and resin parts.

I laid a long metal straightedge on my workbench to help keep the walls straight. On the north, west, and south walls I added DPM 30117 "cornice" sections to form the parapets. I didn't add a parapet to the east wall so the roof could slope toward the river.

Basic assembly. Before assembling the structure's basic box, I added heavy styrene strips as braces to keep the walls straight. The strips overlap at the corners for extra support. I used more parapet sections to form the top of a fire wall between the fifth and sixth

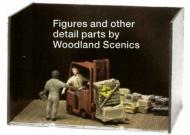
keep the long walls straight, and also

the simulated fire wall he made with

extra parapet sections.



Floors, scribed styrene painted as well-used wood



Andy made two shadow boxes to fit behind open freight doors and suggest interior detailing.



Andy added a metal stairway and landing at the back, along with an outside light and some signs.

bays from the street end, and added styrene cross bracing between the side walls on the second floor level.

The fire wall divides the roof into two sections. I cut two rectangles of Evergreen Scale Models .040" black styrene to fit, allowing a scale 24" overhang beyond the east wall. I added styrene braces on the underside to hold the roof panels flat and added a scale 6" deep eave strip along the east edge of each panel. I cemented strips of styrene along the west parapet to support the high side of the roof and set the roof panels in place.

By now Juneau Avenue had been installed on the layout, and I found that I needed to raise the freight house to

#### Casting your own walls

Here's how I made the wall sections DPM doesn't offer. The mold and casting materials are from Micro Mark's no. 82698 casting starter set.

Mold master. To make the master wall section, I started with a blank wall as at the upper right. After carefully cutting a new window opening, I added a brick lintel and sill that I shaved off an extra window section like the one at the far upper right. The assembled master wall is shown at right, cemented to the bottom of a shallow styrene box that I made as a form for the mold.

Mold making. I mixed a batch of room-temperature-vulcanizing (RTV) silicone rubber and poured it into the mold box at right. Below that is a finished mold removed from the box after the RTV rubber hardened. Making several identical molds can speed the production of finished parts.

Casting. At the lower right is a finished wall section removed from the mold. The two-part casting resin has a working life of three minutes, and is ready to be demolded after 15 minutes, although it takes longer to completely harden. I made a couple more walls than I needed so I could discard any that had defects that might show on the finished model.

Learn more about making your own castings from Tom Piccirillo's article, "Making more than one," in the May 2002 *Model Railroader*, and on our Web site at www.ModelRailroader.com. – A.S.

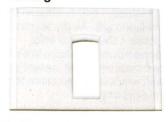


#### Mold making





#### Casting



match the sidewalk. I added .125"-thick styrene strips around the bottom edge of the walls as a foundation. This made the freight doors too high, unfortunately, but I didn't have time to rebuild the office end of the building.

Paint and lettering. The basic cream city brick color of the freight house is Polly Scale Aged Concrete, with the first floor office front masked and sprayed with the firm's Oxide Red. I airbrushed all the DPM window and door castings Milwaukee Gray.

To save time I used paint to suggest strips of rolled roofing. First I painted the roof panels Polly Scale Grimy Black. Next I applied a strip of masking tape with its edge a scale 4 feet from the upper (west) edge of each roof panel and airbrushed a narrow pattern of Polly Scale Weathered Black along the edge of the masking. Then I moved the masking tape down a scale 3'-9" from the sharp edge of the first line and repeated the painting.

I kept on that way until I had airbrushed a series of stripes along the roof panels, each with a fuzzy edge along the down-slope (east) side. The painting makes the freight house roof look more detailed than it really is.

For the signs I masked and painted rectangles of Steam Power Black, then added the white borders and lettering with decals. – A.S.

#### SCHLITZ ELEVATOR



The Schlitz grain elevator complex may be the most recognizable part of the Beer Line. To capture the look of this structure, associate editor Steven Otte turned to kitbashing and scratchbuilding. Inset photo by Wallace W. Abbey

I knew I wouldn't be able to find a commercially produced structure that could stand in for the five-sided Schlitz elevator. Instead, I had to kitbash this Beer Line landmark. As my starting point I chose a Centennial Mills background building kit from Walthers because its concrete wall panels and steel-sash windows came close to the look of the prototype.

ok of the prototype.

Steven started with a Walthers Centennial Mills low-relief building kit. He cut out and taped together photocopies of the kit walls to plan the building.

Centennial Mills is a four-story building. I didn't feel this was tall enough to capture the imposing look of the Schlitz elevator, so I spliced sections of wall together to add a story. This gave me a front wall tall enough for the Schlitz emblem that is so prominent in prototype photos.

First, I made full-size photocopies of all the kit's walls. This is a great way to



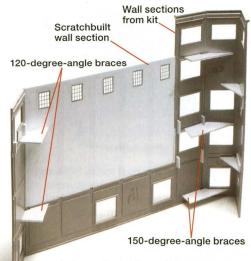
Using a razor saw, Steven cut the kit walls apart along their panel lines. He then rearranged the panels to make the front and side walls of the elevator.

plan any kitbashing project, since it lets you test-fit parts without damaging the originals. Once I figured out an arrangement that would work, I used a marker to transfer the cut lines to the back of the plastic walls and label them, as you see at lower left.

I cut the walls into sections using a razor saw, then sanded the cut edges square. I cemented the parts together to make the wall sections I needed for the tower at the front corner and the one-panel-wide end. The rest I scratchbuilt.

The Walthers wall sections were approximately .060" thick, so for the front wall, I cut two layers from .030" Evergreen styrene sheet. I cut the top layer to make pilasters matching those on the kit walls and added Grandt Line windows. I then glued the new wall to the kit section. I filled any gaps with Squadron putty, then sanded it smooth.

Working all the angles. The Walthers kit walls are mitered to meet at right angles. However, my diagonal front wall would join its neighbors at two obtuse angles. The answer was to add interior bracing that would both solidly attach the walls and maintain the proper angles. Test-fitting the walls on the



To reinforce the oblique joints between the walls of the building, Steven braced them from inside with styrene gussets cut to the proper angles.

layout gave me angles of 150 degrees for the first joint and 120 for the second. See the photo above. After gluing the walls together, I filled any gaps on the front side with Squadron putty. I then aligned the assembly with the grid printed on my cutting mat to find the lengths of the remaining two walls, and scratchbuilt them to fit.

I traced the interior of the building's footprint on a styrene sheet and cut it out to make a flat roof. I used some remaining pieces of the Walthers kit to finish the rooftop portion of the tower and applied two dust collectors to the front. I completed the structure with rooftop details from a Walthers pack, a stairway made of Plastruct parts, and a loading dock, awning, and exhaust stack scratchbuilt from Evergreen styrene. The back wall received no details because on the prototype, that wall backed up to the main brewery complex. On our layout, it backs up to the edge of the layout, where protruding details would be endangered.

Making the decal. The elevator's most recognizable feature is the large Schlitz globe on the diagonal wall. Armed with photos of the prototype, I searched the Web for an image I could work with. The best I could find was in a photo of an HO scale refrigerated trailer up for sale on an auction Web site.

Using Adobe Photoshop, I enlarged the small, blurry image, then traced the emblem on a new layer. When I was done, I added the slogan "The Beer That Made Milwaukee Famous."



After assembling the building, Steven added a scratchbuilt loading dock and awning, Walthers rooftop details, and a stairway made from Plastruct parts.



Tracing an image he found on the Internet, Steven redrew the Schlitz emblem on a computer, then printed it on decal film with a color laser printer.



To complete the Schlitz elevator complex, Steve scratchbuilt the spent-grains elevator from gray PVC conduit. Styrene details, metal and plastic grain chutes, and paper signs drawn on a computer finish the structure.

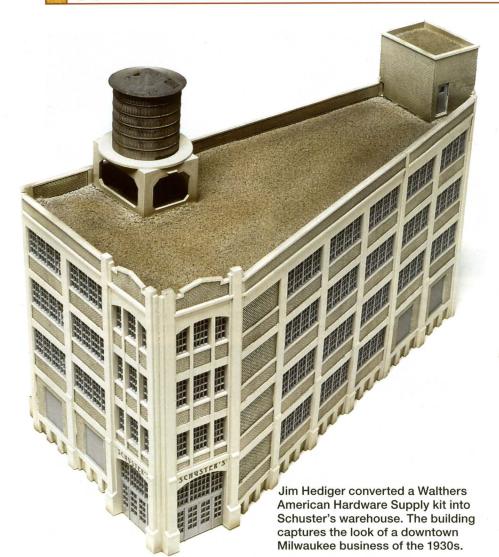
Finally, I printed the image onto a sheet of clear decal paper using a color laser printer. I protected the image with a coat of Testor's Dullcote, then applied it to the front wall of the building.

**Spent-grains elevator.** The other part of the Schlitz elevator complex was less complicated. I scratchbuilt the spent- grains elevator from gray PVC conduit pipe. I cut 13 sections of pipe 10" in length, and six more 6" long.

I glued 12 of the 10" sections in two rows, five and seven pipes long, and split the 13th pipe vertically to make the sections for the diagonal wall. I likewise glued together the 6" pipes to make a shorter section. I scratchbuilt a roof, head house, entry tower, and sign-boards from sheet styrene, then added some grain pipes not seen on the prototype in order to give the building an obvious spot for loading grain cars. – Steven Otte

#### 100

#### **SCHUSTER'S DEPARTMENT STORE**



Schuster's department stores were a fixture in Milwaukee's neighborhoods for many years. The firm operated this warehouse on the Beer Line to receive carloads of retail goods and furniture. These items were then stocked in the warehouse until they were ordered by the neighborhood stores.

My model of the Shuster's downtown warehouse (shown in the photo above) is a kitbashed Walthers no. 933-3097 American Hardware Supply. I chose this kit for its similarity to the concrete and brick construction used on the prototype. However, to allow it to fit on our layout, I had to heavily modify the kit to reduce its size from a rectangular structure covering most of a city block to the triangular structure shown here.

Like Steven, I photocopied the kit walls so I could cut and tape them together in various combinations. (It's much easier to cut paper than the styrene components). By rearranging the walls, I wound up with a fancy main entrance, face brick walls on the front and south sides, and a loading dock across the back. The raised structure at the north end represents a freight elevator house and stairway to the roof.

I began the plastic construction by assembling the main entrance and south wall per the kit's instructions. While the cement hardened, I assembled the long front wall from the kit's original front facade and one side wall. I used 1/4" and 3/16" square strip styrene (see photo) to reinforce the long walls.

The rear wall is a combination of four different panels cemented edge-to-edge on a flat surface. I used more strip styrene to reinforce this wall as well.

The north wall is an original kit panel that makes a 90-degree corner where it joins the rear wall. I filed all the corner joints so they'd blend seamlessly.

I turned the warehouse upside down and traced the roof outline on a sheet



Jim reinforced the butt joints between the wall sections with heavy styrene strips. The only square corner on this building is at the front entrance.



Since the interior isn't detailed, Jim lined the inside the warehouse with a piece of black construction paper so viewers can't see through it.

of .060" styrene. Then I cut the roof to size and cemented it in place along with more reinforcing strips. The roof added an amazing amount of strength to the entire assembly. Later on, Cody Grivno painted the roof dark gray and added the gravel texture.

Next, I used kit details to add some bricked-over windows, a water tank on the roof, and the elevator housing.

I spray painted the entire structure with a concrete gray color. Then I hand-painted the brick panels with a light yellowish gray that simulates Milwaukee's "cream city" brick color.

Once the paint had dried, I added the front doors, window frames, and glazing. Then I put a piece of black construction paper inside of the building, as shown in the photo above, to serve as a view block. Steven made up the Schuster's decal lettering that I used over the front doors and on the elevator tower. – *Jim Hediger* 

#### More on our Web site

Subscribers can watch Neil Besougloff install streets on the Beer Line. To see the video, visit www.ModelRailroader.com.

#### OTHER SIGNATURE STRUCTURES



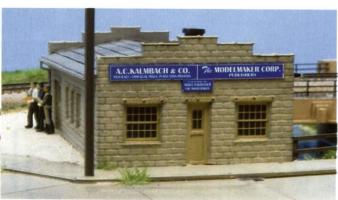
The Milwaukee Road shared the Humboldt Yard office with a local scrap dealer (its faded sign is visible on the right side of the building). George Drury photo



Walthers based its factory-assembled yard office, no. 933-2830, on the prototype at Humboldt Yard. The model includes decals for the YARD OFFICE sign.



Though it wasn't on the Beer Line, our 75th anniversary project layout wouldn't be complete without the first home of *Model Railroader* magazine. This modest building was at 545 S. 84th Street in the Milwaukee suburb of Wauwatosa. Kalmbach Publishing Co. photo



Scale Structures Ltd. produces resin kit no. 1543, "Birthplace of *Model Railroader*," which features etched-brass windows and white-metal detail castings. The figures of Albert C. Kalmbach and his assistants (left) were modified from Preiser figures by associate editor Cody Grivno.



From 1958 to 1969, Walthers headquarters was at 1245-47 N. Water Street in downtown Milwaukee on the city's north side. Wm. K. Walthers Inc. photo



Walthers offers this factory-assembled model (933-2814) in its Cornerstone Series of structures. As with the Kalmbach building, this structure wasn't adjacent to the real Beer Line.



Moving and assembling a modular layout can be a laborious task. Modeler Joe Balint Jr. shows how he eased the load of his club's modular layout by designing a sturdy, yet lightweight benchwork module with a waffle bottom.

# Make lightweight layout modules

A unique "waffle" bottom helps make these lauan plywood modules easy to transport and set up

By Joseph R. Balint Jr. • Photos by Ken Anderson

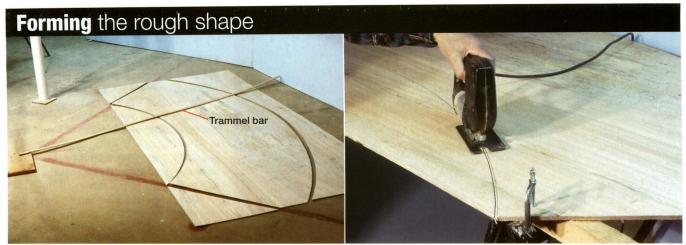
isit a large model train show, and you'll likely find an expansive display layout that features long trains running over multiple mainline tracks. It's easy to overlook the labor and logistics it takes to prepare, transport, and assemble this type of modular layout.

When it comes to transporting a modular layout, the construction and total weight of each module is a significant factor. Many layout modules are formed using a combination of materials including plastic, steel, aluminum, foam insulation board, and plywood trusses. However, I use lauan to construct the framework.

Lauan is a lightweight plywood that is commonly used as underlayment for linoleum and carpeted floors, as a backing for cabinets and furniture, and as facing on doors. It comes in 4 x 8-foot sheets ranging from  $^{1/8}$ " to  $^{3}/8$ " thick, with  $^{1/4}$ " being the most common found at building supply stores. The color and weight of lauan varies based on the type of wood used to form the plywood sheet. I prefer using a brown variety, as it is softer and tends to weigh less.

In the pages that follow, I'll share my techniques for constructing strong, yet lightweight and easy-to-assemble layout modules make from lauan plywood. MR

Joe Balint Jr. and his wife, Eleanor, live in Boone, N.C. He is a lifelong model railroader who began handlaying track when he was 8 years old. The completed lauan waffle modules can be seen in Joe's Great Model Railroads 2006 story on the Sipping & Switching Society of North Carolina.



In the photos shown here, this module has a curve of 90 degrees with a six foot radius along the outer edge. The resulting module, cut from one 4 x 8-foot sheet of lauan, will be just over 8 feet long.

After confirming the design for my module, I began by marking an accurate right angle directly on the basement floor.

I used a chalk line to mark the edges. Next, I used a length of scrap wood to make a trammel bar for marking the inside and outside curves on a single sheet of 4 x 8-foot lauan plywood.

Using several clamps, I temporarily attached a second sheet of lauan to the first marked sheet and prepared to cut

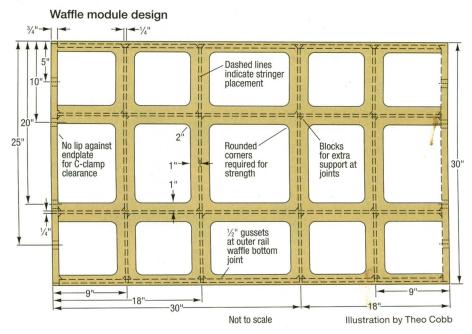
the two boards with a saber saw. When cutting lauan, I use a fine-toothed blade designed to cut laminated materials, which doesn't leave splinters.

I cut the boards about 1/8" to the outside of the marked lines, as I prefer to use them as a reference point and trim the excess off later.



Cutting the attached boards produced two identically curved pieces. Upon removing the clamps, the piece marked with lines will become the top, while the other piece forms the bottom of the module. To minimize the overall weight of my module, I lightened the bottom piece by removing sections of wood in a grid-like pattern, similar to a waffle.

I created this matrix, or waffle, design by first sketching a pattern on my 30" wide module. The illustration here shows the four stringers running from end to end, with ribs that fill in between them at approximately 12" intervals. The grid is 2" wide along the internal sections, ½" wide at the outside edges, and ¾" wide at the ends. Adding small blocks to points where the ribs intersect helps strengthen the module. I traced the inside radius of a masking tape roll to add the rounded corners to the grid. I then use a saber saw to cut out each grid section.



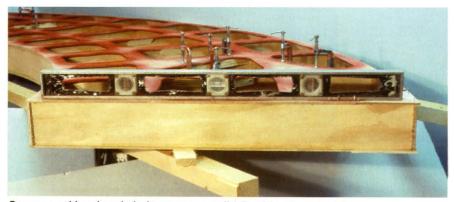
#### Assembling the waffle module



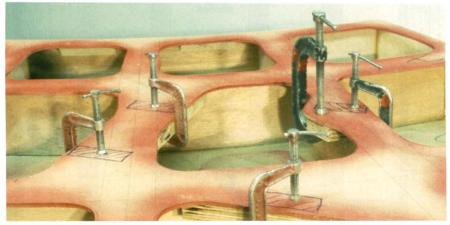
Use spray paint to trace the waffle pattern onto the underside of the top section.



Carpenter's wood glue works best to attach the ribs and stringer pieces.



Square and level ends help ensure a solid fit with other modules.



Joe installs blocks under the waffle bottom to attach the folding legs.

**I began assembling** my module by erecting a work area using a pair of sawhorses and two 8-foot-long 2 x 4s.

First, I laid the top of my module on the work area, before placing the waffle bottom section directly on top of it. After aligning the edges of both sections, I sprayed a light mist of paint over the assembly to transfer the waffle pattern to the top section.

Next, I removed the waffle bottom and glued the stringers to the top section. I started by cutting two ¾" plywood end pieces to length (width of the module, less twice the thickness of the lauan stringers) and secured them to the top using carpenter's wood glue.

Following the end pieces, I cut several 3½" wide lauan strips to length and placed the resulting ribs in the middle of the marks left by the spray paint. Be sure to cut the ribs to accommodate stringers along the perimeter of each grid. As shown in the photos at left, I used small blocks of wood with a cut groove to temporarily hold the ribs in place.

After allowing the glue to dry overnight, I attached the stringers. I started by gluing the stringers along the perimeter of the top section. Where the outside stringers meet the ¾" end pieces, I found it was easier to extend the stringers past the end and cut them off later. In some instances I used clamps or brads to help secure the stringers. After the glue had dried, I repeated this process to install the inner stringers, followed by the middle ribs.

Attaching the waffle bottom was my next step. Here, I used a square and level to ensure the ends were level before gluing the bottom to the ribs and stringers. With the bottom in place, I glued small pieces of wood to reinforce the edges of the outside stringers, and small pieces of ¾" plywood cut to fit where the screws of the metal legs will attach.

After allowing the glue to dry, I used a router and sander to smooth all edges and surfaces before priming the assembly with a good, fast-drying stain blocker. I finished the module by painting the waffle bottom gloss white and the sides gloss black.

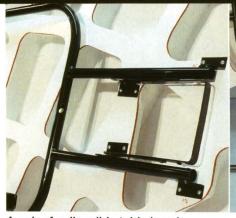
#### Finishing the module

In effort to keep things lightweight, yet sturdy, I supported my module with a set of collapsible table legs. I screwed these legs to the waffle bottom at the locations I reinforced with ¾" plywood. I modified the legs by adding metal extensions to raise the height of the modules. Additionally, at one end of each extension I installed a wood dowel that I drilled to accommodate an office chair wheel. This makes moving large modules or an entire layout easy.

Once this was assembled, I connected two modules using 1" long steel tubes that fit holes drilled into the module ends. Here, the use of a jig helped keep the holes properly aligned on each module. With this design, we don't need short track sections to bridge the minimal gap.

To ensure the tracks stay aligned, the ends must be secured. One way is to attach a 2" long piece of printed circuit board to the end of the module with two 1½" no. 6 flathead screws, as shown in the lower right-hand photo. You can then solder the rails to the circuit board. [Remember to cut a gap in the cladding of the PC board, or you'll have a short circuit. – Ed.]

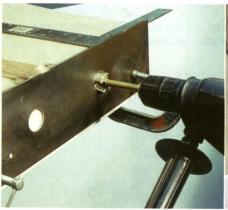
Another way to secure the end rails is to install two brass 1½" flathead wood screws and solder the rails to them. In either case, the roadbed must be rigid, so I used strips of lauan.



A pair of collapsible table legs is sturdy enough to support the minimal weight of each waffle module.



Joe uses metal tubing legs to raise the modules' overall height. Casters make the sections easy to move.



Use a jig when drilling alignment holes for the modules. This will ensure that the sections will connect properly.



Joe lays his track on lauan roadbed and solders the rails at the end of each section to brass screws or PC boards.

# Layout assembly The second of the second of

To join two modules, I roll them together, align the pins, connect them with 2½" clamps, and plug in the wiring harnesses, which are easily accessible through the waffle bottoms. It takes no longer than 30 seconds.

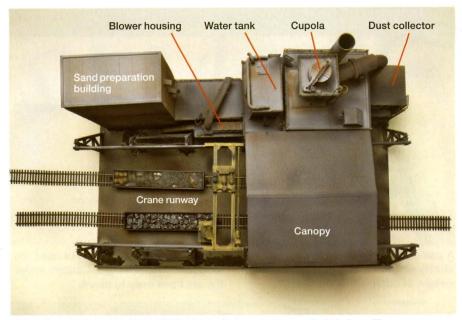
No floor is level, but there's no need to make adjustments with this design.

The waffles are so strong and tightfitting that they can easily carry the weight of any legs that don't quite touch the floor.

Finally, to move the modules I installed end plates that are designed to carry two modules face-to-face. These end plates include wheels and

handles, making the units easy to move and transport.

As shown in the photo above, my design also makes it possible to stack and lock module units together. This feature saves space when the modules are stored or when they're being transported to and from a show.



This plan view shows the relationship between the materials handling area across the front and the shallow relief production buildings to the rear.

## Building Freytag's foundry

Part 1: Styrene structural parts simplify the construction of this great-looking industry

By Dean Freytag • Model photos by the author

t first glance, models of heavy industry seem complicated because you're trying to take in everything at once. However, if you can break a major industry down into its components, the smaller pieces are much easier to grasp.

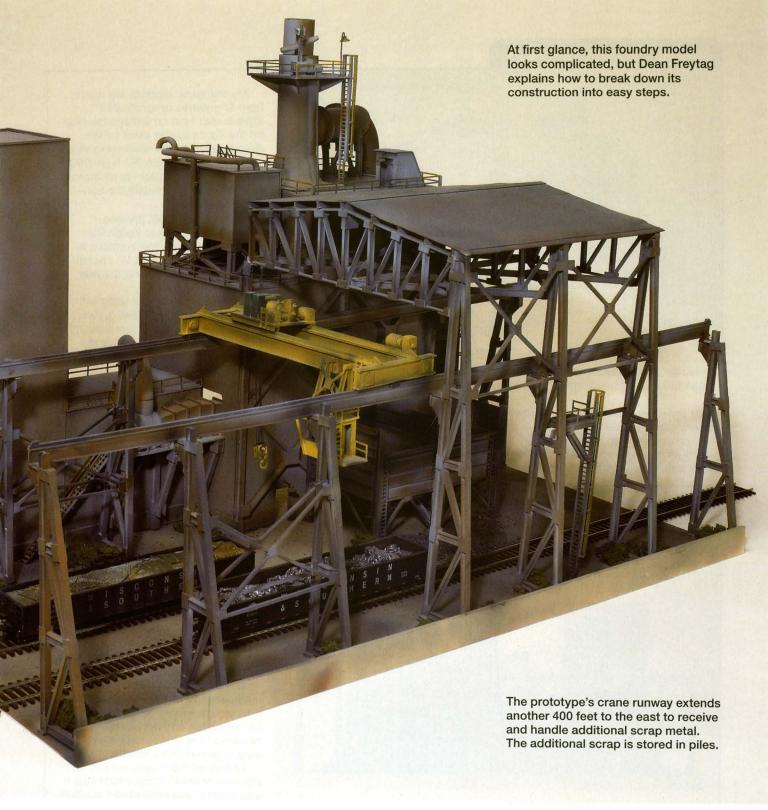
I built this HO scale model based on photos of a former Briggs & Stratton foundry in West Allis, Wis. It was part of a huge manufacturing plant,

but the foundry's odd-shaped structures, ductwork, stacks, and overhead crane also make it an interesting separate model industry with a rectangular footprint that's a scale 107 feet wide and 175 feet long (143/4" x 24").

The foundry consists of five major structures: a tall sand preparation building, a low connecting building with a big blower across the front, the cupola furnace, a dust collector at the east end, across the front.

The crane delivers steel scrap to a pair of bins that feed the furnace. There's room for a track or two underneath the crane to receive gondolas of scrap metal and other raw materials. The prototype crane runway extends some distance in both directions to reach a sand receiving area and more scrap storage to the east.





#### **Assembly tips**

I built my model from styrene sheet, strip, and structural shapes that represent steel components. Several decades of experience have taught me the wisdom of finishing each subassembly before final installation. Small pieces are easier to handle and paint.

I use an airbrush to spray Floquil Primer on most of the parts. Its neutral gray is a common industrial color, and it's easy to weather to simulate years of use and exposure to the elements.

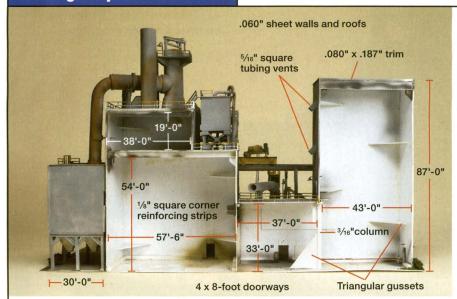
My foundry is built on a single piece of .060" sheet styrene so I could easily fasten all of the structural elements to the base. To keep the base from flexing during construction, I used double-faced carpet tape to temporarily attach it to a sheet of ½" plywood. Follow along as I explain how I built this foundry. MR

Dean Freytag has been a model railroader since the 1950s. He is wellknown for his prize-winning HO scale models and programs about scratchbuilding and kitbashing big industries.

#### More on our Web site

A complete list of all the styrene materials and detail parts Dean used to build Freytag's Foundry is available on our Web site at www.modelrailroader.com.

#### **Building the plant structures**



This rear view shows how I assembled the production buildings as a series of open boxes reinforced with strip styrene and triangular gussets in the corners.

The three major structures all have cores made of .060" sheet styrene as shown in the photo above. I built them as open-sided boxes without a rear wall. I butted the side walls

against the backs of the front walls, aligned these outside corners, and cemented them together. Then I added 1/8" square strips and triangular gussets as inside reinforcements.

My triangular gussets are made from 2" squares of scrap .060" styrene that I cut on a diagonal. I lop off the inside corner point so the gusset will clear the reinforcing strip.

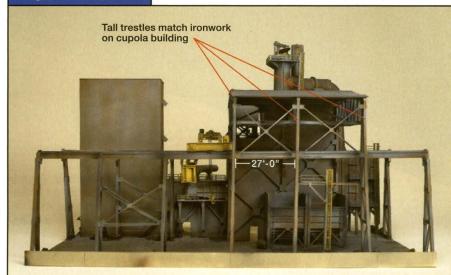
I laminated a scale 36" high .060" strip around the bottom of all these exterior walls to simulate the concrete foundations.

My roofs are .060" styrene trimmed for a close fit inside the walls. I scribed the top surfaces at scale 5-foot intervals. A ½" I beam across the back supports the rear edge of the high roof.

I covered the exterior walls with Evergreen corrugated siding. Here, I cut each panel slightly oversize and laminated it to the walls. After the cement hardened, I carefully trimmed the edges flush.

The cupola building includes a step in its west side that holds the rectangular water reservoir. I supported the back edge of this stepped roof with another piece of ½" I beam reinforced with braces made from the same material.

#### **Cupola steelwork**



Three cross-braced vertical columns are attached to the front of the furnace building to support the canopy that protects the crane and scrap metal bins.

The front of the cupola building is covered with steelwork that supports one side of the crane. It includes three 60-foot vertical <sup>3</sup>/<sub>16</sub>" H columns that support the overhead canopy.

The cross bracing is secured with two sizes of gussets I made from .030"

styrene. I cut 16 scale 30" x 42" gussets and 10 that are 42" square.

I aligned the three columns and marked them a scale 48" up from the bottom, 72" down from the top, and then midway between the other two marks. On the left column, I cemented a small horizontal gusset just below the top mark, even with the left edge, and extending to the right. I added another small horizontal gusset just above the lower mark, and then a small vertical gusset centered over the middle mark. All three of these gussets should extend toward the right. Then I applied matching gussets on the back side.

Using the left column as a pattern, I made a mirror-image column for the right side, a middle column with its horizontal top and bottom gussets centered from side to side, and a square gusset in the middle.

I centered the middle column on the front of the building, made sure it was square, and cemented it in place. Then I added the two side columns, making sure the gussets remained in alignment and square across the front.

All of my angled cross braces are pieces of 3/16" I beam cut to fit, starting with one long piece across each panel. Then I cut and fit the short I beams.

I covered the middle joints with square gussets and added a couple of horizontal gussets to tie the tops of the end columns to the building.

#### **Blower assembly**

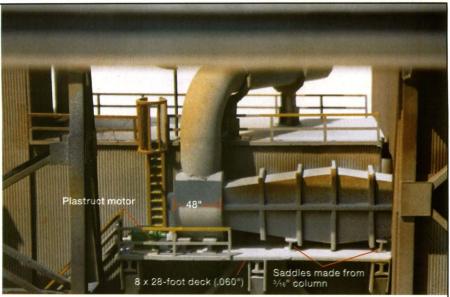
A cupola furnace requires a large volume of air provided by a powerful fan system called the blower. My blower is mounted on a steel deck supported by three triangular brackets I made from 3/16" H column and gusset plates cemented to the front wall.

I made the fan housing from a scale 1" diameter styrene tube, capped with .030" ends. The supporting saddles are scraps of 3/16" H column.

The sides of my ductwork are .060" styrene, cut a scale 22 feet long and 7 feet wide in the middle, tapering down to 4 feet wide at each end. Using scale 36" wide spacers, I cemented the two sides together and then added top and bottom panels made from strips of .030" styrene.

Two exterior supports are spaced at scale 36" intervals. I made them from pieces of .060" x .100" strip that I cut to fit and cemented in place.

I used 9/16" tubing for the intake pipe, carving and sanding the end to match the blower housing's contour. Then I cut it off a scale 48" above the housing and added a 90-degree



This powerful fan draws in clean air and blows it into the furnace at high velocity to improve the combustion and obtain maximum efficiency.

elbow to connect the blower to the intake pipe. This pipe sits on a pair of cradles I made from .060" styrene.

I positioned my blower a scale 5½ feet from the outboard end of the

platform. Then I cut a .030" base for a Plastruct M3 motor, and made a tapered belt guard from .060" styrene that extends from the center of the blower to cover the motor shaft.

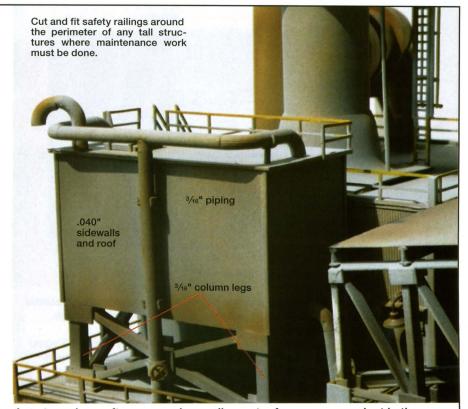
#### **Cooling water reservoir**

The unusual rectangular reservoir is mounted on the lower cupola roof. It has a scale 12 x 24-foot bottom I cut from .060" sheet, a pair of scale 12 x 24-foot sidewalls from .040" sheet, and 12 x 15-scale foot end walls. Assembling these walls around the floor left me with open corners that I filled with .060" square strips.

Four scale 9-foot legs support the water tank. I made them from  $^3/_{16}$ " H columns with a pair of gussets mounted at right angles on each end. I then cemented a leg under each corner of the tank so the gussets were flush with the tank walls.

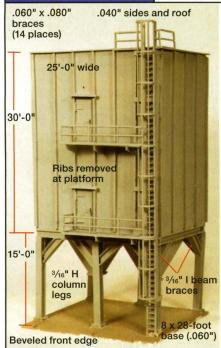
Using <sup>3</sup>/<sub>16</sub>" I beams, I cut and fit the angled bracing in the same manner as the steelwork attached to the front of the cupola building.

The roof is .040" sheet I cut to provide a slight overhang all the way around. I made the simplified tank plumbing from 3/16" components including snap-on tees for the valve bodies and a handwheel control. I drilled holes in the tank to attach all of the plumbing parts and cemented the supports in place. Finally, I installed a safety railing along the roof edges.



A rectangular rooftop reservoir supplies water for use as a coolant in the various plant processes. All the plumbing is made of Plastruct parts.

#### **Dust collector**



The dust collector filters the furnace exhaust gases to capture any particulates that may be released during the scrap-melting process.

Fine dust, generated in the process, is captured by a dust collector that filters the furnace gasses to remove any particulates. My dust collector is essentially a scale 30-foot tall box on legs, as shown in the photo.

I cut six 15-scale-foot legs from <sup>3</sup>/<sub>16</sub>" H beam, turned the deck over and cemented the legs in place. Then I cut a dozen 6-scale-foot long 45-degree angle braces that I cemented to the legs one at a time, keeping each leg as square as possible.

While the leg assemblies dried, I fabricated the sloping hopper bottoms from .040" styrene. [A simpler solution would be to cut them out of an HO scale Athearn Pullman-Standard 100-ton covered hopper floor. – Ed.]

I cut 14 long vertical braces from .060" x .080" strips and cemented one of these vertical braces flush with each end of the left side to serve as spacers against the cupola side. Then I spaced the others equidistant from each other and flush with the top edge.

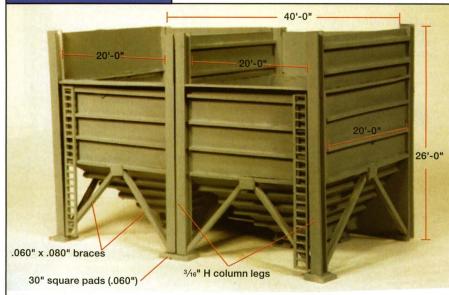
Dust collectors require considerable maintenance, so I installed a

safety ladder for access at the right corner. A pair of simple balconies lead from the safety ladder to the access doors. I used a round file to shape the platform ends to fit against the ladder cage, and then I trimmed them even with the left side of the vertical brace on the wall.

I applied the railings by working from left to right, starting by cutting off the end panel short of the second stanchion. Then I smoothed the side of the stanchion and used it as the corner post. I trimmed the long section off so the third section of the railings fit perfectly against the middle vertical slat of the safety cage. After the joints dried, I went back and smoothed them with a small file.

I cut the collector's roof out of .040" sheet styrene sized so it's even with the outer faces of the vertical bracing mounted on the front, left, and right walls. The rear overhang should be slightly longer. Then I set this roof aside for installation after I determined the location of the pipe from the furnace top during final assembly.

#### Scrap receiving bins



The overhead crane delivers steel scrap from incoming gondolas or reserve piles into these large bins. The scrap is then conveyed into the furnace.

Heavy-duty bins, 20 scale feet square, feed the scrap metal into the prototype furnace. I made them from .040" sheet styrene and 26-foot lengths of 3/16" column. My bins were made as a one-piece assembly, even though they look like individual boxes.

Two conveyors transfer the scrap metal into the furnace, but they're hidden beneath the bins. To simulate this machinery, I cut a pair of scale 10-foot lengths of 1/4" I-beam for the sides of each conveyor. I cemented a 4 x 10-foot rectangle of .040" sheet styrene to

the top inside of the lower flanges to hold them together.

Each conveyor is supported on a pair of 1/4" channels that I cemented on edge underneath the I beams and inset a foot from each end. In turn, both ends of these channels rest on scale 30" square "concrete" pads. I fit pieces of 1/8" tubing about a scale foot inside the beams to represent the end of each conveyor and added a row of scale 9" disks, punched out of .040" sheet with a paper punch, to represent the bearings on the conveyor rollers (spaced at scale 24" intervals). Finally, I cemented a .060" square strip along the inner edge of the I beams as a cementing ledge for the slanted sides.

Next, I centered the two conveyors on the rear wall and cemented them in place. Adding the .040" sloping sides and front panels is a cut-and-fit job that turned out to be much easier than I thought. I finished the slope sheets by adding the bottom horizontal bracing made of .060" x .080" strip.

Next, I installed the horizontal .060" x .080" bracing on the vertical sides and added top chords to the front and back bin edges.

#### **Cupola top details**

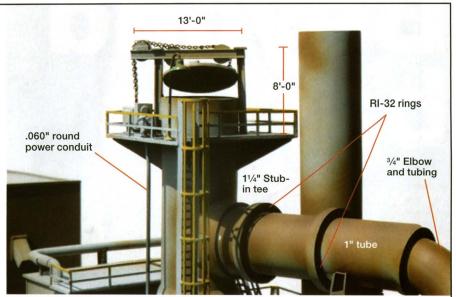
Detailing the cupola roof began with cementing and blending a 11/4" tube into a cone taken from a Plastruct VC-5 set that represents the top of the furnace. I cut the top off the cone and sanded it to a scale 7'-6" height, cementing its 16-scale-foot square base to the roof of the furnace.

The cupola stack is a scale 50 feet long. It extends 32 scale feet above the roof and passes through it, so I could cement it to the interior deck.

I made a 16-scale-foot square work platform from .060" sheet and cemented it a scale 3 feet below the top of the stack. I added four triangular braces under the platform corners.

The small stack gantry crane was fabricated from ½" columns 8 feet long. The .040" disk suspended from the gantry is a lid that protects the furnace when it's shut down.

A Plastruct 11/4" stub-in tee connects the large pipe to the side of the furnace stack just above the tapered cone. I removed the cementing flutes from the male end of the tee, and slipped a scale 21-foot length of 1"



The interesting cupola top details look complicated, but the Plastruct industrial parts greatly simplify the work needed to add these eye-catching items.

pipe inside. I added a pair of large rings, spaced as shown, and a 90-degree elbow to make the connection to the vertical dust collector pipe. Then I cut the scale 36-foot tall stack from 1"

diameter tubing and cemented it to the deck using a VHF-32 flanged cap to attach the stack to the deck just behind the dust collector pipe. Last I added the caged ladder.

#### **Plant assembly**

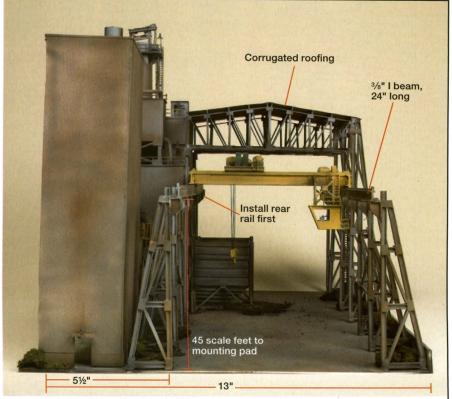
It took some care to mount the structures on the base so everything would be properly aligned in the crane bay. I started by drawing two parallel lines on the base, spaced 5½" and 13" from the rear edge.

I cemented ¼" square strips around the inside perimeter of all of the plant structures to provide maximum bonding strength. Then, starting at the cupola end, I cemented the production buildings in place. Walthers Goo is a good adhesive for this step, since it remains resilient after it sets.

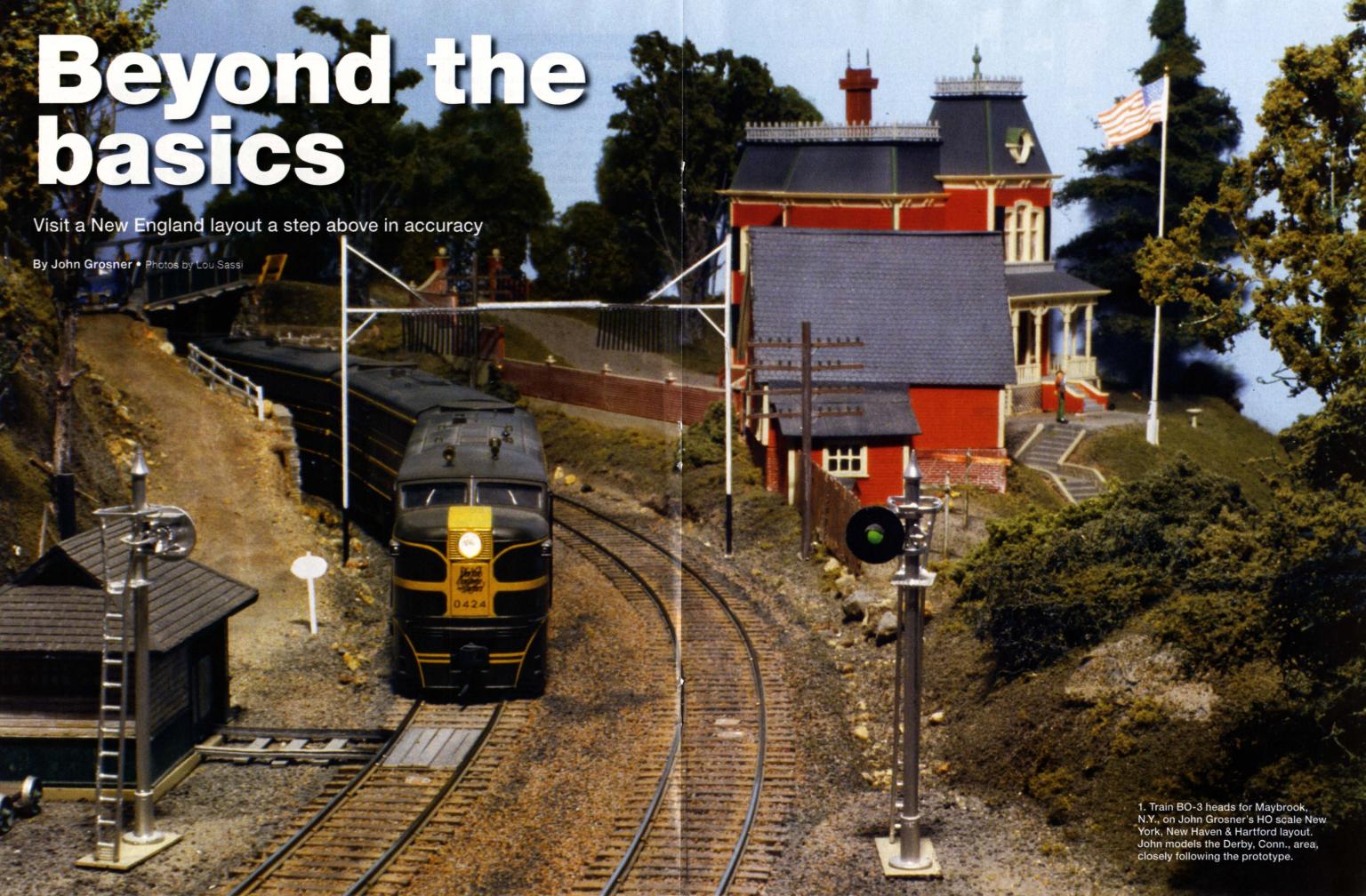
Next, I added the dust collector and marked on its loose roof the exact location of the pipe from the furnace top. After cutting out the opening, I slipped a flanged ring onto the pipe, worked the roof into place, and cemented everything together so the ring concealed the roof joint.

At this point, I installed the remaining safety railings around the perimeter of the main roof and the reservoir deck, then added the stairways.

Next month, I'll explain how to make the crane, the supporting trestles, and its canopy.



Keeping everything parallel is the trick to assembling the long overhead crane that transfers the raw scrap into the furnace bins at the front of the foundry.





y New York, New Haven & Hartford RR is a product of everything I've learned from building three previous railroads. My first was based on a 4 x 8 foot plan that was published in *Boys' Life* magazine when I was 11. My newest, which has been under construction for more than eight years, occupies a 15'-6" x 19'-6" space in my basement.

The track plan grew out of two influences. First, I made a 1:8 proportion drawing of the available space with 34" minimum radius circles drawn in all the corners. Second, I selected a prototype location: Derby Junction, Conn., a spot with a lot of railroad history.

#### A busy prototype

The New Haven's Naugatuck Line branches off the four-track, electrified Shore Line Route at Devon, traveling eight miles along the Housatonic River to Turkey Brook Yard. The New Haven had many small yards close to industrial areas, and like the others, Turkey Brook Yard was used as a drop-off and pick-up point for symbol freights. The Derby/Shelton switcher stationed there dispersed these cars. Just beyond Turkey Brook Yard was Derby Junction, with its wye. Here the Naugatuck Line

ran northward and the Maybrook Line turned westward.

An interlocking tower, or signal station SS B-253 as referred to by the New Haven, controlled the routing of trains. The wye permitted train movements in all three directions.

The double-tracked Maybrook Line featured hourly 100-car freight drags in both directions. Westerly trains leaving the Cedar Hill classification yard consisted mostly of other roads' empties. Arriving at the Maybrook classification yard, these cars would be interchanged with the Erie; Lehigh & New England; New York, Ontario & Western; Lehigh & Hudson River; and the New York Central. By my layout's time, this line was freight only, with passenger service ending in the 1930s, but it did see the occasional fan trip.

At Derby Junction, the Naugatuck Line continued north. It paralleled its namesake river through Waterbury to Winsted, where it terminated.

#### **Modeling Derby Junction**

My model of this railroad begins at Turkey Brook Yard and extends past SS B253's interlocking. A portion of the Naugatuck Line extends north past Derby Station, through the backdrop

2. Already running late, RDC no. 121 loses even more time as it waits for no. 1206 to clear the interlocking. The GP9 is heading back to Turkey Brook Yard after switching Canal Street.

and on to hidden staging at Waterbury. Westward, at the junction, the Maybrook Line runs through Derby, across the Housatonic River and into Shelton. Then it, too, passes through the backdrop, where it continues to the yard at Maybrook, N.Y. In Shelton, the modeling focus is the Canal Street area. This locale was rich with water-powered factories of all types. This area is under construction.

I began work on the train room in November 2000. I coved the corners of the room with Sonotube, a heavy-duty cardboard tube used in construction, cut in quarters. I installed fluorescent

#### See the layout for yourself

John Grosner's HO scale Derby Junction layout will be available for tours during the National Model Railroad Association's

2009 national convention. The convention is slated for July 5-11, 2009, in Hartford, Conn. For details, go to hn2009.org.





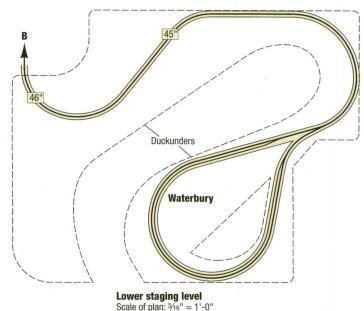


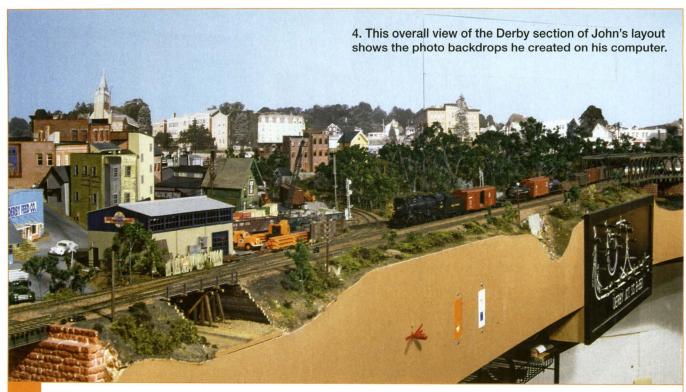
lighting fixtures over the layout, but not over the aisles, planning to add a ceiling valance.

The layout uses open-grid benchwork made from 1 x 4 no. 2 pine or 5/8" plywood. I located the joists carefully so as not to interfere with switch machines. The roadbed is a sandwich of plugged and sanded 1/2" plywood and 1/2" Homasote.

All visible track is weathered code 70 rail handlaid on basswood ties, with turnouts and crossings built in place. I used code 83 flextrack and commercial turnouts in hidden areas. All curves have easements.

Once the benchwork and track were done, the electronics came next. I originally wired the layout for DC common rail cab control, with five walkaround throttles. Though this setup worked well, the benefits of Digital Command





#### Making backdrops from digital photos

**To create my own** photo backdrops, I scan slides of hills, farmlands, and buildings into my computer. I then import them into a photo-editing program called *Print Shop Pro*. I use the software to backdate the photos by removing or altering details like power lines, telephone poles, and parked cars. I then size the photos to fit the desired

perspective; usually, this involves printing the photos several times at different sizes. I then cut out the sky and put the photos together to make a montage, a process that takes patience. When I have an arrangement I like, I use a glue stick to adhere them to the painted sheetrock, Masonite, sheet plastic, or other backdrop material.

#### The layout at a glance

Name: New Haven's Derby Junction

**Scale:** HO (1:87.1) **Size:** 15'-6" x 19'-6"

Prototype: New York, New Haven &

Hartford Railroad

Locale: Shelton/Derby, Conn., and

Maybrook, N.Y.

Era: late 1940s to mid-1950s

Style: walk-in

Mainline run: 80 feet

Minimum radius: 321/4" (main), 24"

(sidings)

Minimum turnout: no. 5 (main),

no. 4 (sidings)

Maximum grade: 1.5 percent Benchwork: open grid

Height: 45" to 48"

Roadbed: 1/2" Homasote on 1/2"

plywood

Track: code 70 handlaid on visible track; code 83 flextrack for hidden

track

**Scenery:** joint compound over expanded bead foam board

Backdrop: painted Lexan sheet or

drywall with coved corners

Control: NCE Corp. Digital Com-

mand Control

Control led me to change the system. I use the NCE Pro Cab system, and have equipped most of my locomotives with sound decoders. This conversion went smoothly, with few problems.

All turnouts are powered. Mainline switches have two-color light-emitting diodes on the control panels to indicate their alignment.

The railroad features an operating signal system. I handbuilt the signals using Oregon Rail Supply components and photocell detectors. Other electronics include crossing flashers, one with gates and bell; a track scale (see "Build a working track scale," August 2000 *Model Railroader*, page 84); and structure lighting.

The terrain went together quickly with 2" white Styrofoam stacked in place and hot-glued. I roughed in the hillsides with a steak knife, then shaped the final contours with the metal nozzle of my Shopvac. I raked the hose over the foam, and the vacuum removed the mess. I then covered the foam with joint compound. This technique lets me sculpt exactly the topography I desire.

I use all types of ground cover imaginable, both natural and synthetic. The deciduous trees are made of celadon (candy tuft), a dried flower. I spray these with shades of green paint and roll them in ground foam. Once they are in place, I use joint compound to thicken the trunk, blend in the sprigs, and add a root system. I make coniferous trees similarly, but with commercial floor-scrubbing pads for foliage.

#### True-to-life structures

I try to build the structures for the layout to be as true-to-life as possible. Few of the buildings are stock kits; many have been kitbashed or scratch-built using cast-resin components. I





researched buildings along the line using both online sources and books such as Grimaldi's *History of Derby*; books on Shelton, Conn.; books published by Bob's Photos; and the New Haven Historical and Technical Association's quarterly *Shore Liner* magazine. These have greatly helped me capture the region accurately.

When it comes to detailing, the question is "How much is enough?" The time and extra work spent building the rods of a mechanical interlocking or the starred truss ends on the walls of an old brick factory is worth it when a visitor raves about them.

#### **Operations**

During operating sessions, through freights OB-2 or ED-2 set out and pick up cars at Turkey Brook Yard. The Turkey Brook switcher or a local freight distributes these cars. Meanwhile, a crew at Maybrook keeps busy breaking up and assembling trains, sorting cars, and serving local industries. Occasion-

#### More on our Web site

Current subscribers can see a 360-degree panorama of John Grosner's layout at www.modelrailroader.com ally, the "Naugy," a local passenger train running between Waterbury and Bridgeport, makes an appearance.

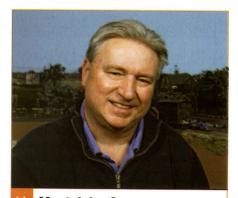
Typical operating sessions last one to two hours. The switch lists used by crews call for setouts and pickups at numbered locations. These locations are easily discernable by flipping the card over, where track plans are shown with spotting numbers on the tracks. Even though the railroad has more than 30 spotting locations, this system helps operators unfamiliar with the layout get their jobs done right with a minimum of questions.

When showing the railroad to visitors, I usually run long freights of 60 to 70 cars. Typical motive power would be Alco FAs in a three-unit arrangement or double-headed class L-1 2-10-2s.

#### A fulfilling hobby

Building a model railroad has been a fun, fulfilling, and fabulous experience. It has also allowed me to come in contact with many wonderful people who share my interests. The model railroad-related conversations I have had with complete strangers have been incredible. Few hobbies inspire such camaraderie. MR

6. New York, New Haven & Hartford 2-8-0 Consolidation no. S150, renumbered to avoid conflict with another engine no. 150, passes through Turkey Brook on John's layout.



#### Meet John Grosner

John grew up watching long Maybrook freights across the Housatonic River from his bedroom window. John has been a woodworking teacher for 35 years. He and his wife, Lana, have two grown children, John Jr. and Tracy. John and Lana both enjoy solving complicated switching puzzles.



## Working be for N scale diesels beacons

Flashing lights increase the realism of N scale locomotives

By Lennart Svedberg • Photos by the author

mber rotary beacons were common equipment on diesel locomotives from the 1970s to the 1990s. Railroads added the lights to help yardmasters spot locomotives in the sea of cars in freight yards. After converting my freelanced N scale Chicago & North Western Tap Creek layout and most of my diesels to Digital Command Control, I thought it would be interesting to further explore the digital route by simulating such lights.

These beacons couldn't actually rotate, but I could wire them to a function output on the DCC decoder that was programmed to flash the light in a way that simulates a rotating beacon.

For the purposes of demonstrating the technique in this article, I installed beacons in an N scale Atlas GP30 and a Kato SD40-2. However, these methods should work for nearly any scale or type of diesel. I'm happy with the result, and my locos look a lot more "alive" with a flashing beacon on the cab roof.

#### **Picking your parts**

Start with a locomotive equipped with a DCC decoder that has an available decoder function output and features programmable lighting effects.

The type of bulb I used is shown in fig. 1. You can buy them directly from GRS Micro Liting through its Web site, www.grsmicroliting.com. Take my advice and get a few extra bulbs. They're quite fragile and break easily. If you model in another scale, substitute a bulb of suitable size.

The resistor value in ohms depends on the track voltage of your DCC system. My system is set at 12V. If you use a higher voltage, you would need a resistor with a higher rating. Use this formula: Ohms = (track voltage - bulb voltage) / bulb current (in amps).

Using the values of my 1.5-volt, 15milliamp (.015 amp) bulb, the formula becomes: ohms = (12V - 1.5V) / .015.

Select the resistor that comes closest to your calculated value. In my case, the formula gave a result of 700 ohms, so I choose a 680-ohm resistor, the closest value commercially available.

#### Installing the light

Cut a piece of .010" x .040" styrene strip, approximately 1/2" long. Using a sharp knife, trim it a bit narrower than the original .040". Then, as shown in fig. 2, bend it around the lightbulb and glue it in place with styrene cement. Use a pair of tweezers to make sure you



Fig. 1 The beacon. This is the bulb Lennart used, a 1.5-volt amber Super Micro Bulb from GRS Micro Liting.

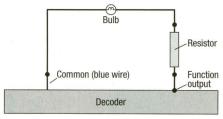


Fig. 4 Wiring diagram. It doesn't matter which bulb lead gets the resistor, as long as it goes to the decoder's function output (green wire).

#### -

#### Materials list

#### **GRS Micro Liting**

GRS103 1.5V amber Super Micro Bulb

#### Miscellaneous

.010" x .040" styrene strip 680-ohm, ½-watt resistor Heat-shrink tubing Silver paint

get a tight fit around the bulb where the ends of the strip meet.

When the glue has dried, cut and gently file smooth the ends of the styrene strip to disguise the seam. Then, using a fine brush, paint the styrene ring silver (or the color used by of your chosen prototype) as shown in **fig. 3**.

Next, drill a hole in the locomotive cab roof where you want to place the beacon. You might need to deviate a bit from the prototypically correct location to make sure that the bulb and its wires will not interfere with the mechanism or the proper seating of the shell.

Thread the bulb wires through the hole in the roof and test-fit the bulb. The bottom of the bulb may be somewhat oval, so you might need to widen the hole. When the bulb fits well, glue it to the roof with a drop of cyanoacrylate adhesive (CA). Wait for the CA to cure properly before continuing.

Inside the shell, bend the wires toward the roof. Make the bend as close



Fig 2 Wrap it up. The base is made from strip of .010" x .040" styrene cemented to the bottom of the bulb.

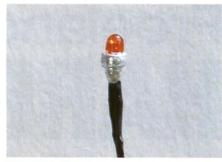


Fig. 3 Bulb base. Lennart trimmed the ends of the styrene strip before he painted the base silver.

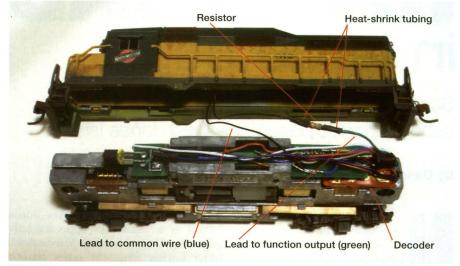


Fig. 5 Atlas installation. In this GP30, the resistor is soldered into the wire leading to the decoder's F1 function output and protected with heat-shrink tubing. The other bulb lead goes to the common (blue) decoder wire.

to the bulb as possible. Be careful – if you try to bend the wires too close to the bulb, you might break it.

#### Wiring

The details of the next step depend on the type and location of your locomotive's decoder. But in general, one bulb wire connects to the common (blue) output of the decoder and the other goes to the unused decoder function output. The resistor should be soldered into one of those connections, but it doesn't matter which. See fig. 4 for a wiring schematic.

Start by cutting the bulb wires to a suitable length. If you make them too short, the body shell will be in the way when soldering the bulb's leads to the decoder or when removing the shell for maintenance later on. If you leave the wires too long, it will be difficult to fit them into the shell.

Slip two short lengths of heat-shrink tubing over the wires before soldering. Solder the resistor to one of the bulb wires; it doesn't matter which. Choose the one that gives you the most suitable location for the resistor. Solder the leads to the decoder, then slide the tubes over the connections and shrink them to protect the wires from short circuits.

**Figure 5** shows a sample installation in an Atlas GP30 with a Digitrax DZ143 decoder. Check the instructions for your specific decoder to find the location of its function outputs.

Replace the body shell, being careful not to pinch the wires between the shell and the frame. Damaging the insulation can cause a short circuit that will blow the bulb.

The only remaining step is to program the flash time on your decoder's function output to simulate the interval of a rotary beacon. Since the details of that task depend on your decoder, consult the decoder's manual for programming instructions. MR

Lennart Svedberg lives in Ekerö, Sweden, where he works as a software engineer. He lives with his wife, Pia, his son, Markus, and their two cats. They also have two grown children, Per-Olov and Karin. Lennart models a freelanced version of the Chicago & North Western RR in N scale.

# Freelancing a HARBOR RAILROAD in large scale

Scratchbuilt waterfront scenes highlight
John Franzen's basement-sized Jones Island

By Dana Kawala • Photos by William Zuback

o matter how many times I visit, there's always something else I haven't noticed before, said Erwin "Erv" Hagen as he pointed out the detailed interior of the Harley-Davidson repair shop on John Franzen's Jones Island model railroad. Erv and Larry Easton, both close friends of John, and John's wife Lucia gave me a tour of the 28 x 28-foot layout modeling the 1950s in 1:24 and 1:29 proportions. Scene after superdetailed scene showcases the spectacular work of the late John Franzen, a talented modeler who made the switch to large scale after retiring in 1999.

"For most of his life John modeled in HO scale," said Larry, "He especially liked narrow gauge." John's HOn3 Rio Grande Southern was featured in the November 1987 *Model Railroader*.

"I think John was drawn to large scale because of the amount of detail he could add to his structures," added Larry, who met John four decades ago, "He was dedicated to building a model to the highest detail level possible."

#### A freelanced view

As Larry, Lucia, and Erv take me around the layout, they point out that this large-scale Jones Island isn't an exact model of the real place. Instead, the freelanced setting of the railroad is inspired by many memories that John and Lucia shared of the south side of Milwaukee when they were young.

Part of the city of Milwaukee, Jones Island is a peninsula approximately mile-long that separates Milwaukee's inner harbor from the outer harbor and Lake Michigan. For decades Jones Island has been highly industrialized, and includes a large sewage-treatment plant. However, that part of the city was once home to a thriving ethnic community that earned its livelihood mainly from commercial fishing.

Starting in the 1870s, Polish Kashubian immigrants from the Baltic, followed by Germans and Scandinavians, lived on Jones Island and fished Lake Michigan to earn a living until the 1940s. Commercial fishing flourished in other locations on the south side of Milwaukee into the 1950s.

John's interest in this part of the city's history began in 1956 when he graduated from high school and moved to Milwaukee to attend Marquette University. There he met, and eventually married, Lucia La Fonde. Her family operated one of the last commercial fishing tugs out of Milwaukee.

Even back then, John thought that a layout based on the south Milwaukee harbor would make a great model railroad. Decades later, and after building a Mexican narrow gauge railroad in large scale, the *Ferrocarril Minerales de Santa Lucia*, he went to work building a layout inspired by long-gone scenes from Milwaukee's lakefront. [For the story and photos of his first large scale



1. A boxcab creeps past the grain elevator on John Franzen's Jones Island. The layout is a showcase of John's superdetailed structures.

railroad, see page 72 and learn where to get the PDF download *The Best of indoor large scale: John Franzen. – Ed.*]

#### A solid foundation

The benchwork of the Jones Island layout is built as strong as a fine piece of furniture. Supports made of 2 x 4s hold up 1 x 4 open-grid sections topped with 1" plywood. John built the benchwork to be strong enough not only to be a secure foundation for his railroad but also to support him as he constructed the layout.

After he laid all the roadbed and track, John built the layout's scenery by working from the backdrop forward to the fascia. For many tasks, this approach often required him to climb on top of the benchwork.



All the track on the layout is Aristo-Craft flextrack and turnouts on cork roadbed. For track ballast John used a combination of playground sand and kitty litter.

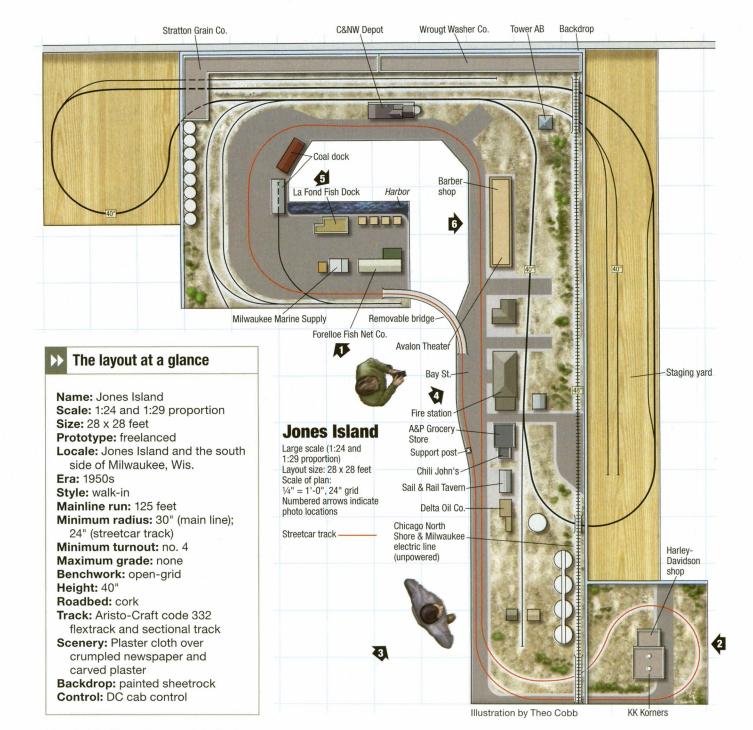
The track for the high-speed electric line is for scenic purposes only. John scratchbuilt the catenary over that line and the trolley wire over the streetcar tracks following prototype photos from the Milwaukee Road and Milwaukee Transit Co.

Most of the basic scenery forms are plaster cloth over crumpled newspaper or carved plaster covered by ground foam. The streets are made of Durabond 90 joint compound painted gray. He also weathered the pavement with acrylic paint washes.

For the water in the harbor, John first painted the plywood base with acrylic paints. Once the paint dried, he poured clear resin in the harbor and added wave and ripple effects.



2. A look inside the Harley-Davidson shop reveals a workbench full of tools and parts. All of John's scratchbuilt structures have detailed interiors.



#### Scratchbuilt and superdetailed

The Stratton Co. Grain Elevator is the only structure on the layout based on a prototype that actually existed on Jones Island. Most of the scenes are inspired by John's memories of south Milwaukee along Lake Michigan. The fishing tug next to the net company is modeled after the vessel that Lucia's grandfather owned.

Other scenes pay homage to well-known Milwaukee institutions, such as the Harley-Davidson motorcycle shop attached to KK Korners [The initials "KK" are Wisconsin shorthand for the Kinnickinnic River on the south side. – *Ed.*] and Chili John's, a famous Green

Bay, Wis., restaurant that was a favorite hangout for the Green Bay Packers.

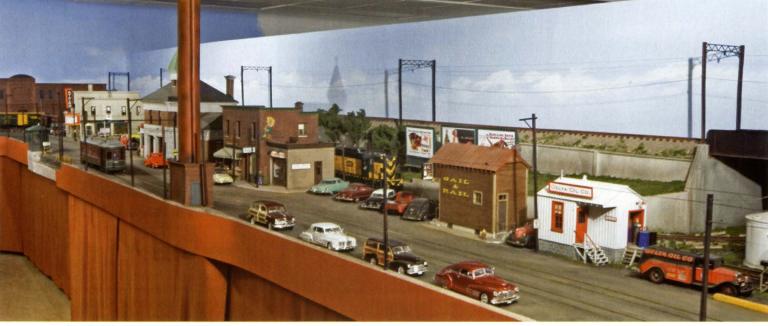
All the buildings, automobiles, and figures on the layout are 1:24 proportion. Modeling structures and setting up scenes was John's favorite part of the hobby. Almost all of the structure models on the layout are scratchbuilt.

"The amazing thing was that you'd visit the layout one day and John would mention an idea for a scene," Erv said, "and then on your next visit, the scene would be done."

Whether following a photograph or working from his imagination, John started most of his structure projects by making a basic form out of foam core sheets. He'd then use a variety of materials for wall and roof coverings, including balsa wood, textured styrene sheets, or Make It Stone spray paint to simulate a concrete or stucco surface.

John had a fantastic eye for detail and a knack for finding the right material for a particular project. He downloaded era-appropriate magazine covers from the Internet, re-sized them to 1:24 scale, and printed them out to fill the magazine racks in the pharmacy. The stools at the soda fountain are made from golf tees.

"We were all amazed at how John could walk out of a hobby shop or craft store with an arm load of all sorts of



3. South Milwaukee in the 1950s was the inspiration for Bay St. along the front of the layout. The electric line along the backdrop is non-functioning.

seemingly unrelated supplies, and then bring them together into a complete, superdetailed model," said Erv.

All of the structures on the layout have full interiors, even those models that don't feature large windows. For example, the Sail and Rail Tavern along Bay St., which has hardly any large windows and a roof that's glued on, features a full bar complete with dozens of whiskey bottles that John turned from clear styrene. Although no one could easily see the full interior, building the complete model from the inside out was one of his great joys.

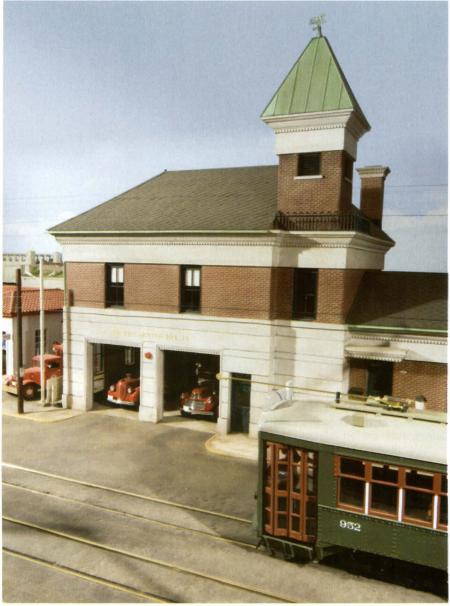
Many of the structures have interior and exterior lighting. With its chase lighting and marquee, the Avalon Theater was John's most extensive lighting project. He installed more than 130 miniature light bulbs on the model.

Automobiles and figures help complete each scene. The 1:24 die-cast cars and trucks are from several manufacturers. John added detail parts to most of them as well as some weathering as appropriate. For most of the figures, he cut apart, kitbashed, and repainted 1:24 Lemax figurines as needed.

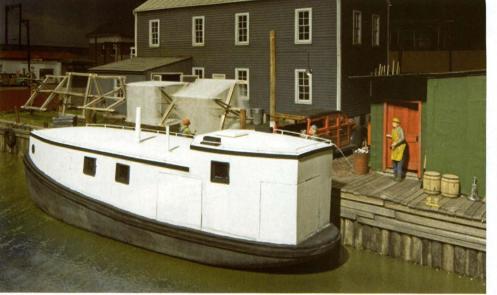
#### **Tinkering with trains**

All of the rolling stock on the railroad is 1:29 proportion. Motive power on the layout includes an Aristo-Craft GP7 diesel that runs on the Chicago & North Western RR main line and an LGB streetcar that runs along Bay St.

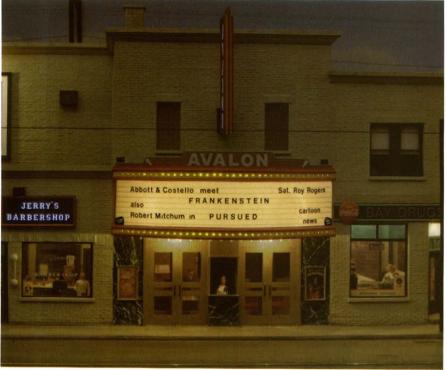
John kitbashed the third locomotive, a Milwaukee Harbor Commission boxcab, from styrene parts over an Aristo-Craft "critter" boxcab frame and mechanism.



4. A streetcar rolls along Bay St. as two fire engines stand ready inside the Engine Co. No. 11 firehouse. The structure has a completely detailed interior.



5. The fishing tug La Fond is moored next to a pair of net dryers. The La Fond is based on a tug that Lucia Franzen's grandfather owned.



6. The Avalon Theater is a highlight of the Jones Island layout. The model has a detailed lobby that includes red carpeting. Using more than 130 light bulbs, John added interior and exterior lighting to the structure.

According to Lucia, the first thing that John would do when he brought a new locomotive model home was to take it apart and learn how it worked. Lucia credits John's resourcefulness to the influence of his father.

"John came from a long line of tinkerers," Lucia said, "His dad's hobby was fixing and restoring clocks, and if he couldn't find the right part, he'd just make it himself. John learned a lot from him."

The 1:29 freight cars are from a few different manufacturers. John weathered all of his rolling stock using pastel powders and acrylic paint washes.

John didn't hold operating sessions, but always enjoyed running his trains. They truly brought each of his detailed scenes to life.

The layout is run with DC power packs and is divided into three electrical blocks, but the wiring was never completed. John was thinking about converting the railroad to Digital Command Control.

#### Keeping the railroad going

John built his Jones Island layout as a permanent part of his basement, so



#### Meet John Franzen

A lifelong modeler, John Franzen began building the first of his two large scale layouts in 1999 after his retirement as executive director of Oshkosh and Winnebago Public Housing Authorities. Along with building HO scale and large scale models, he collected Lionel O gauge trains. John passed away in 2006. His wife Lucia and a group of his friends keep the Jones Island layout in operating condition.

#### Additional photos

For more on John Franzen's first indoor large scale layout, the

Ferrocarril Minerales de Santa Lucia, and to see additional photos of his Jones Island layout, you can purchase and download The Best of indoor large scale: John Franzen. This Information Station article collection is available online under the Our Store tab at GardenRailways.com. - D.K.

PARTIANS INFORMATION STATION

Best of indoor large

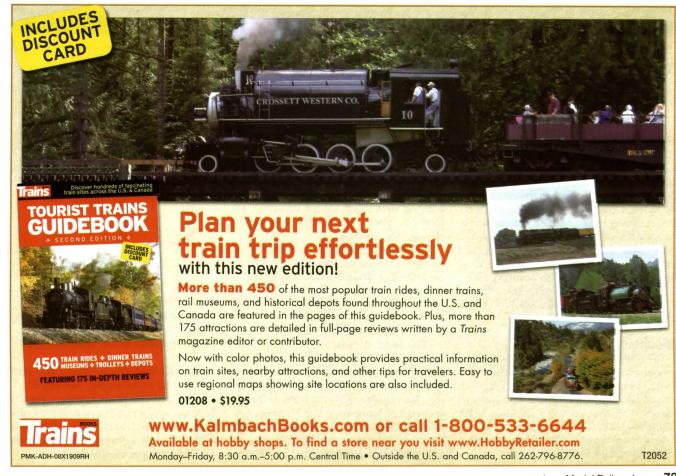
scale: John Franzen

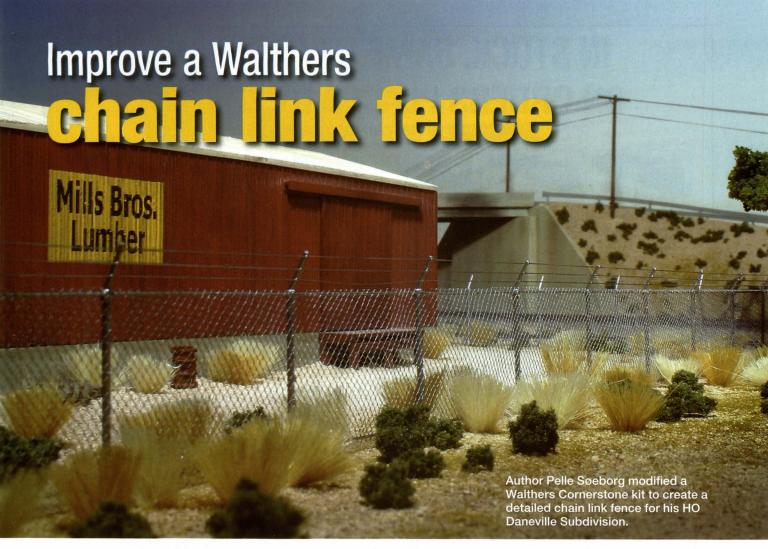
the model railroad would be almost impossible to move without destroying it. For now Lucia plans to keep the lav-

John, Larry, Erv, and several other modelers were part of an informal club that would meet, visit, and run trains on each other's layouts. John's model railroad was always a highlight, and this group of friends maintain and still sometimes operate the Jones Island railroad. The layout has been open to tours during regional train shows in the Oshkosh area.

"I'll keep the layout here as long as I can so friends and visitors can enjoy it," adds Lucia, "After all, that's what John would've wanted." MR

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Make your fence sturdier and more interesting with simple modifications to a kit

By Pelle K. Søeborg • Photos and illustrations by the author

eal trackside businesses and industries must protect themselves from theft and vandalism, and chain link fencing is one of the most common ways to provide this type of security. Modeling a chain link fence is a great way to add an interesting detail to a layout. A number of manufacturers make chain link fence kits, including BLMA, Great West Models, and Micron Art. I used a Walthers kit.

#### Modifying an HO scale kit

The Walthers kit comes with styrene parts for poles, gates, and other details, along with a separate piece of mesh chain-link material. The newest version of the kit now includes 8½" lengths of .019" soft iron wire, but since I was using an older kit, I had to make some modifications.

After reading the instructions, I thought that following the assembly method described would result in too flimsy a fence. I decided to take an alternative approach.

Instead of gluing the mesh material to the outside of the fence posts as described, I drilled .020" holes (fig. 1) through the posts using a no. 76 bit in a pin vise. The is easily done with the posts still on the sprue. Drill the holes perpendicular to the posts.

The next step is to slide the posts onto the two horizontal rods. However, I decided against using the styrene rods included in the old Walthers kit for two reasons. First, I needed longer sections of fence than the kit provided. Second, the styrene rods were too soft. I replaced the rods with Detail Associates .019" brass wire (part no. 2506),

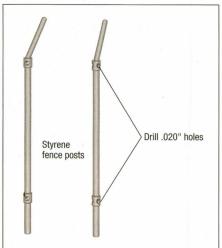


Fig. 1 Drill holes. Pelle drilled .020" holes (with a no. 76 bit) at 90 degree angles through the styrene fence posts included in the Walthers kit.

which allowed me to make the fence longer and more stable. See **fig. 2**.

I spaced the posts evenly – the kit's instructions suggest a maximum of 10 scale feet apart – and secured them with cyanoacrylate adhesive. I made hooks for the gates per the instructions.

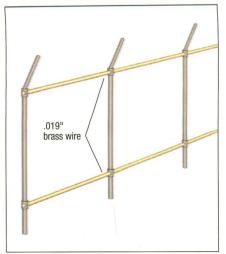


Fig. 2 Add brass wire. To strengthen the chain link fence, Pelle attached the posts to .019" brass wire with cyanoacrylate adhesive (CA).

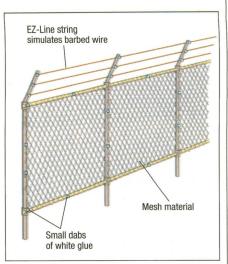


Fig. 3 Mesh and barbed wire. Pelle attached mesh to the posts with white glue. He also glued EZ-Line to the top of the fence to simulate barbed wire.



Fig. 4 Mount the fence. Finally, Pelle painted the fence with Floquil Old Silver. Once it had dried, he mounted the chain link fence around a lumber warehouse.

Next, I glued strips of the mesh to the posts and wire with small dabs of white glue, as shown in **fig. 3**. I find that white glue adheres to almost anything, and it will hold the mesh to both the styrene posts and brass wires. For fence corners, I glued the mesh strips to each side of the corner posts.

Once the glue dried, I had a much stronger chain link fence detail for my Daneville Subdivision than I would have if I'd followed the Walthers instructions word for word.

#### Add barbed wire

The Cornerstone kit lacks the strings of barbed wire sometimes found at the top of chain link fences. To replicate this barbed wire detail, I used a product called EZ-Line from Berkshire Junction (www.berkshirejunction.com). It's a thin elastic string that I also use for telephone lines. I glued three strings of EZ-Line

between each section of the fence using white glue.

Finally, I painted the finished sections of fence with Floquil Old Silver. This enamel paint will cause the EZ-Line to twist and wrinkle at first, but don't panic. The elastic string will eventually contract to its original position.

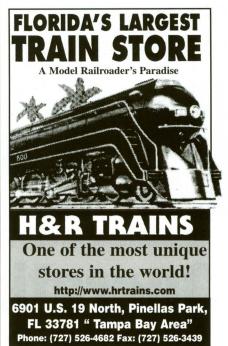
Once the paint dried, I was ready to position the chain link fence around the Mills Brothers' Lumber warehouse on my layout. I drilled 1/32"-diameter holes into the plywood surface, then secured the fence posts in them using carpenter's glue. See **fig. 4**.

Thanks to the modifications I made to the kit, I was able to handle the long sections of fence without any damage during installation. MR

Pelle Søeborg lives in Denmark and is a frequent contributor to Model Railroader magazine.



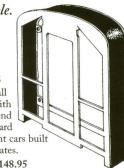




### The Coach Yard

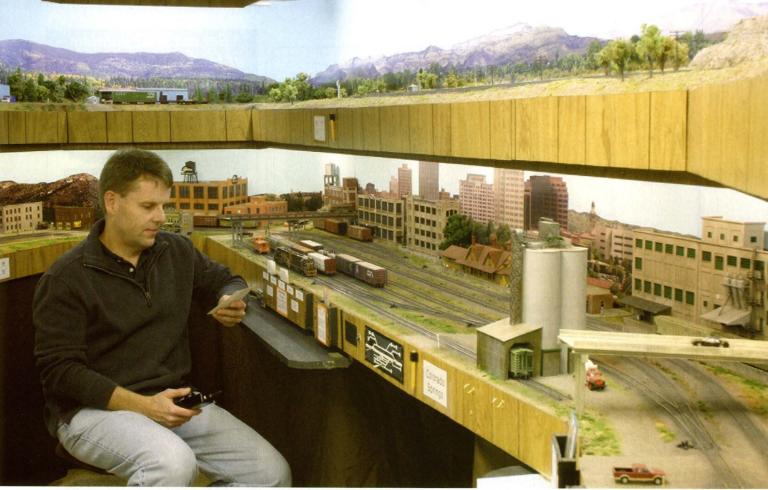
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Bernie Kempinski sits as he works Colorado Springs Yard on the lower deck of Doug Tagsold's HO scale Denver & Rio Grande Western layout. Paul Dolkos shares ideas on creating sit-down operating positions on your own layout.

## Operating sitting down

A different approach to operating a model railroad

By Paul J. Dolkos • Photos by the author

perating a layout is often a standup activity that may last for many hours. There are some situations, however, where operating while sitting down is not only more comfortable but more desirable for operations.

For example, the bottom deck of a multi-deck railroad might be low because the builder didn't want the upper deck to be too high. When the tracks are about 36" high, it's easy enough to follow a train around the room on your feet, but switching in a yard or industrial area can be awkward. Here's where sitting down on a roll-around chair makes a lot of sense.

#### **Basic rules**

There are some ground rules you should observe when creating sit-down

positions, so plan accordingly. You can't plop down a chair in many aisles because they're too narrow, and if other operators have to squeeze by a person in a chair, it's an annoyance. So an aisle has to be wide enough for people to easily pass behind the sitting operator.

Though there may be no physical limit as to how far an operator can roll a chair along the railroad to access an area, it's probably best to work in a space just a few feet long. For example, place the operating position at a yard throat or at the switch leads into an industrial area. If you try to move along an extended area, there will most likely be some standing required.

Another need to consider is the ability to reach the turnout controls. Your range of reach can be extremely limited for layouts with hand throws. Remote controls permit working an extended area without moving the chair or having to stand up.

For layout owners with mobility difficulties, the considerations for seated positions would apply to the entire layout room.

#### **Real-world examples**

On Doug Tagsold's Rio Grande layout, shown above and in fig. 1, the 20-foot-long lower deck yard is normally run by two operators, one seated at each end. Though they may stand up from time to time to reach something in the middle of the yard, the operators seldom need to leave their chairs or even move them very far. There's about four feet of aisle space behind the operators, which makes it easy for road crews to run trains into the yard or on the deck above without interfering with the yard crew.

Since yard area aisles are often congested with bodies, when possible place

the operators, either seated or standing, on opposite sides. Sometimes this isn't possible because yards are located along walls in the layout room. But if the layouts can be moved out from the wall into the room, then a dedicated operating pit for yard crews can be created. A crew member may have to duck under to get into it, but once there, a yard operator is relatively stationary. Furthermore, no matter what the height of the yard, because the yard operating aisle area is exclusive, it can be made into a sit-down position by raising the floor level.

Jack Ozanich has a seated position on a lower deck at the end of a dead-end aisle that has a branchline terminus with multiple industrial spurs. See **fig. 2**. The aisle space is relatively tight, but since it's at the end, there's little potential interference with other crews. Also, trains run onto the lower deck just once or twice a session. The track wraps around the operator on three sides, so rather than rolling back and forth, the operator just rotates in the chair to switch cars.

#### **Chair considerations**

Operating while sitting down is a little like a desk job, so it's easier to sort car cards, create switch lists, or handle other paperwork. Ideally there should be a shelf, car card boxes, or other cubbyholes to hold the paperwork and instructions. As much as possible, these features shouldn't protrude beyond the fascia. Tuck them under or integrate them into the benchwork edge. A shelf can also be hung below the fascia or installed on drawer slides.

Suitable roll-around chairs are readily available at office supply and other department stores. Chairs without armrests and those having smaller seats and backrests probably will best fit in most aisle spaces. To facilitate easy movement, the floor should be wood, tile, or concrete. Though a chair with casters can be moved around on carpet, it may be more difficult and cause undue wear. However, layout-room carpeting shouldn't be ruled out if the layout needs only one or two chairs.

Another use for a roll-around chair is to easily negotiate under duckunders, as shown in **fig. 3**. Going through a duckunder is much easier on a chair. It also helps to have a railing to grab to help people pull themselves along.

Before deciding that a job is a sitdown position, the specific layout environment needs to be considered. How high or low can the top and bottom of the benchwork be? How far will one have to move around to do the job? How far will operators have to reach into the



Fig. 1 Easy reach. Some nearby turnouts are operated with manual ground throws on Doug Tagsold's 20-foot-long lower-level Denver Yard. Despite this, Jim Talbott (back) and Doug can sit to run the yard efficiently and comfortably.



Fig. 2 Crew location. In this dead-end aisle, Bob Milhaupt can sit down and not interfere with other operators on Jack Ozanich's Atlantic Great Eastern RR.

layout? Can clustered remote turnouts or other automated controls limit the need to move about? What's the best way to position shelves, writing surfaces, and car card boxes? How many people will be moving through the area, and how much additional aisle width will be required? Questions like these can be answered by creating cardboard mock-ups.

With the popularity of multi-deck layouts, sit-down train crew positions can ease operations in some areas in a layout. There may be times when people are hesitant to volunteer for a yard job because of the perceived complexity. If you provide a comfortable chair, the armchair railroaders may suddenly be fighting for those operating jobs. MR

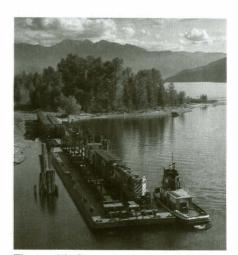
Paul J. Dolkos is a frequent contributor to Model Railroader. His article about modeling different types of track appeared in the October 2008 issue.



desk chairs allow operators to easily move through this 48" duckunder on John Peterson's O scale Beaufort & Moorehead layout.



## An HO scale branch line with a rail-marine twist



The tug *Iris* G. eases a barge holding a CP Rail GP9 into the slip at Rosebery, B.C., for assembly into a train headed for Nakusp. John C. Illman photo

A spare room plan that serves its customers by rail barge

By Jim Spavins

fog hangs over Slocan Lake in the early morning as the constant chugging of the tugboat echoes off the sides of the sheer rock faces of the Canadian Rocky Mountains deep within British Columbia. The tug easily slips through the water with its light load, a few empty pulpwood cars and a locomotive and caboose. After a short trip across the water to the barge slip at Rosebery, the train will unload and begin its trip into the wilderness to serve some of the remote sawmills and pulp-

wood operators on the system. It's just another day on Canadian Pacific's (CP) Slocan Lake Subdivision.

The CP operated ferries on lakes in British Columbia until the 1980s. Trains were short, since six to eight cars were all that would fit on a typical rail barge. The trains used cabooses, such as the ones shown in the photos, up until these remote branch lines were abandoned. The curves were sharp and the grades steep. These real life challenges create a perfect prototype to fit into a spare room.



#### The track plan at a glance

Name: CP Slocan Lake Division

**Scale:** HO (1:87.1) **Size:** 9'-0" x 11'-0"

Prototype: Canadian Pacific

Era: 1970s

Mainline run: 40 feet Minimum radius: 20" Minimum turnouts: no. 4 Maximum grade: 2.3 percent

#### Planning for the right feel

My design criteria for this layout features some of my personal modeling preferences, including spectacular wilderness scenery. Getting the correct feel of a rural branch line in a small space can be a difficult challenge. Fortunately, the prototype offered many solutions, including some near-vertical hills and tight curves. Using these features, I created a design that captures the lonely feeling of this Canadian branch line, and the layout's dramatic scenery would lend itself well to photography.

To get the most out of my available space, I wanted as long a mainline run as possible. The configuration shown above provides approximately 42 feet of running. The line starts at the barge slip at Rosebery, snakes around the walls of the room, crosses over itself, and ends at the sawmill at Nakusp. I felt it was important to get the running length I wanted without using duck-unders. (Having built duckunders into several previous layouts, I found that they were nothing short of a pain in the back. And I'm young!)

The track elevation ranges from 48" to 52". This provides a good compromise between the ideal heights for construction and comfortable viewing of the layout. In addition, the elevations provide for clearance under the layout for a workbench and storage.

The layout height also allows view blocks and effective use of forced perspective. [Forced perspective is a technique where smaller scale structures and scenery are used to convey the feeling of distance. See Scenery Step by Step in the February 2008 issue of *Model Railroader. – Ed.*]

One necessary compromise is the 20" minimum mainline curve radius. While this is a little sharper than I would have liked, the real Slocan Lake Sub also had sharp curves. And, tight curves are not that noticeable when running short trains with four-axle lo-

Illustration by Rick Johnson

comotives and 40- and 50-foot freight cars. If you have the room to expand the layout plan, you may be happier with curves 24" or larger.

I've tried to keep all grades to a minimum. The grade on the plan is 2.3 percent, and it starts after the tunnel and continues all the way to the sawmill.

Due to the depth of the scenery, I added an access hatch in the area behind Bear Claw to help with layout construction and maintenance. John Pryke's article "Pop-out scenery for access hatches" in the February 1994 *Model Railroader* provides a great technique for building lightweight hatches.

#### **Operating the layout**

A typical day on the branch starts with the arrival of the train barge from Slocan City. First, the locomotive and cars are unloaded into the small yard. Then the crew sorts the train into the correct order for its ride up the branch.

Next, the train leaves Rosebery and runs all the way to the sawmill at Nakusp. After completing the work at the sawmill, the crew assembles the train for its return journey back to the lake. Along the way, the crew makes a stop to setout and pick up



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cars at the pulpwood siding at Bear Claw. The train then continues its way to Rosebery.

After arriving in the yard, the crew weighs the cars to be carried on the barge at the scale track. Once the cars have been weighed, the crew uses those weights to determine how the cars are loaded on the barge, which needs to remain balanced. Once loading is complete, including the locomotive and the caboose, the tug takes the barge back to Slocan City, and the session is finished.

#### **Construction tips**

With a small model railroad like the Slocan Lake Subdivision, it's important to be able to get it in and out of the layout room, especially when building the benchwork or when it comes time to relocate. The benchwork could be built in sections that fit through the door. Ideally, the sections would sit on top of a set of bookcases or be supported by their own legs. The track should represent light-duty rail, typical of branch lines. Code 70 or 55 in HO scale would work.

Since scenery dominates the railroad, lots of pine trees and rock work are a must. By limiting the amount of track used and increasing the depth of scenery in particular areas, it will appear that the railroad wanders through the wooded hills. Adding a detailed backdrop to the layout will make the scenes (as well as the room) feel much larger than they really are.

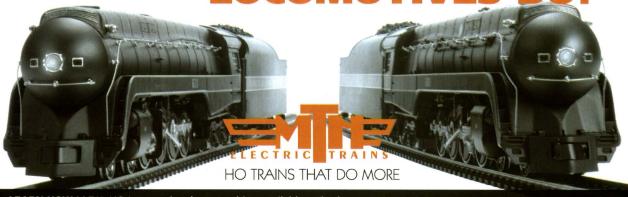
To ensure that the scenery dominates the trains, I've kept the buildings to a minimum, further emphasizing the rural nature of the branch. However, even with three bridges, a water tower, a maintenance shed, a snowshed, a scale track, and the sawmill complex, there's plenty of structure modeling to do. The barge and the slip will probably have to be scratchbuilt.

#### The final product

My plan for the Slocan Lake Subdivision provides a model railroad that's both visually interesting and fun to operate. The layout could be easily built by someone with basic modeling skills, yet also allows for some building challenges within its compact footprint. MR

Jim Spavins has been an active model railroader for more than a decade. He was a columnist for Model Railroad News and is active with the Mohegan Pequot Model Railroad club in southeastern Connecticut. When Jim isn't working on trains, he can be found broadcasting college hockey games at Rensselaer Polytechnic Institute or working as a civil engineer.

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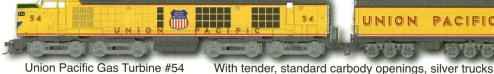
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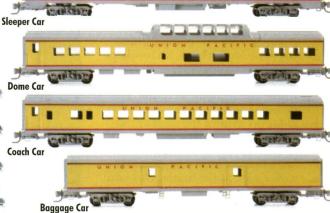
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#### Installing decoders in brass locomotives

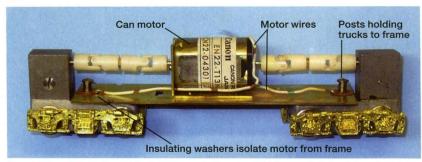


Fig. 1 Starting point. Mike's HO scale brass GP9 has a basic drive mechanism. The insulating washers isolate the motor terminals from the frame.

Most of today's brass locomotives are designed to accommodate a Digital Command Control (DCC) decoder. However, converting an older brass model to DCC can be a bit more complicated. In this month's column, I'll show you how I added a decoder to a Sunset HO scale Electro-Motive Division GP9 from the early 1980s.

**Isolating the motor.** The Sunset Geep's drive mechanism shown in **fig. 1** is very simple. It consists of a flat piece of brass with a can motor mounted in the middle. Each truck provides contact to a single rail. The post holding the truck to the frame also conducts electricity from the rail through the frame to the motor.

It's critical that the motor terminals are electrically isolated from the frame. It already was on my locomotive, but for many years it was common for brass model manufacturers to use the frame as a conductor between one of the rails and the motor. This was especially true in models with open-frame motors, where the frame of the motor is electrically common with one of the brushes. On those locomotives, an insulator (paper, electrical tape, or styrene) must be placed between the motor frame and locomotive frame. The material must be thin enough that it doesn't disturb the mechanical alignment of the motor.

[Sometimes one brush on an open-frame motor was grounded with a wire to the frame. This wire has to be removed. Another method used a strap to connect the brush to the motor frame. On those motors, the strap must be removed or cut. - Ed.]

You also need to use the right screws on the frame. Metal screws can make electrical contact between the motor brush and locomotive frame. Nylon screws are a better choice here.

When isolating the motor, be sure to check your work with an ohmmeter to see if there's continuity between all the wheels and both motor terminals or brush contacts.

**Decoder selection.** I used North Coast Engineering's (NCE) D13SR decoder for this project. It's a basic, wired motor decoder with three lighting functions. The decoder is made to fit in a scale width HO scale hood locomotive.

The Geep's can motor draws much less current than the 1.3 amp continuous rating of the decoder. If you have an engine with an openframe motor, it's best to check the stall and running current draw with an ammeter before selecting a decoder. To do this, put your locomotive on a test track, connect your ammeter in series with one of the rails, and run your locomotive on direct current (DC). Make sure your ammeter can measure more than 1 amp.

Another important consideration is the low-speed performance. Some older brass locomotives were known for minor binding at low speeds. A decoder that offers some sort of low-speed motor control, such as back-electro-motive-force control (back-EMF), can be helpful. The D13SR doesn't have back-EMF, but it has torque compensation. This is somewhat similar to DC power packs that have pulse power. Basically, it gives a higher voltage "kick" to the motor at periodic intervals. The rate at which it gives the kick is controlled by Configuration Variable (CV) 116. The strength of the kick is controlled by CV117. Both CV116 and 117 are explained in the decoder manual.

Though I'm not using any functions in this installation, NCE decoders have a feature that can be useful with locomotives that have only four-wheel pick up (one rail per

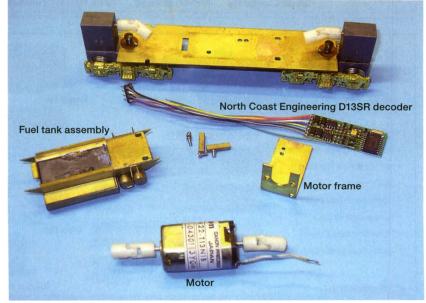


Fig. 2 Decoder installation. To install the decoder, Mike removed the motor from its mounting bracket. This let him to remove the original motor wires.

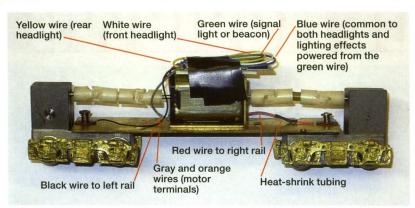


Fig. 3 Wiring. Here we see the locomotive with the mechanism reinstalled and the decoder added. Mike covered the unused wires with electrical tape to prevent an accidental short circuit.

truck). These locomotives are more susceptible to power interruptions than those with eight-wheel pick up. Therefore, the headlight turns off when the locomotive goes over turnouts with dead frogs. The NCE decoder remembers its function settings when the power is interrupted, so the headlight comes back on when the power is restored.

Decoder installation. First, I removed the motor (fig. 2) from its mounting bracket, and I cut the original motor wires. These wires are located between the truck posts and the motor terminals.

I then mounted the decoder to the top of the motor with doublesided foam tape and attached the red and black wires to the truck posts. See fig. 3. I cut the black wire to length, but had to lengthen the red wire. I covered the solder joint with heat-shrink tubing. I've had success using 26AWG wire (in the National Model Railroad Association's recommended colors) for decoder installations. Digitrax sells bundles in 25-foot lengths.

If you plan on using the locomotive on DC layouts after the decoder is installed, make sure the red wire goes to the right rail and the black wire goes to the left. The orange wire goes to one motor terminal, and the gray wire is connected to the other.

I don't have working headlights on my GP9 because that would require installing new headlight castings. If you want your locomotive's headlights to be operational, see the wiring notes in fig. 3.

After I'd completed the wiring, I tested the installation by placing

the locomotive on my DCC system's programming track and reading back CV1. It should read back the number 3. If it does, the track and motor connections are good.

I ran the locomotive on my test track and made sure it ran in the correct direction. If it doesn't, you can either reverse the motor connections or correct it by reading back the value of CV29, adding one, and reprogramming that value back into CV29. If you've already added one to CV29 and you want to reverse the direction again, go back to the original value.

Setting up the CVs is a simple matter. I typically use four-digit addresses that match the locomotive's cab number. Since I haven't painted this unit or decided what its number will be, I used the twodigit address 03.

The motor adjustments are easiest to make by using "opsmode" programming, often called programming on the main. I set the throttle to speed step one and experimented with CVs 116, 117, and 2 to get a mix that gave me good running at low speed. By programming on the main, I was able to get immediate feedback from my experiments. I ended up with a value of 10 for CV2, a value of four for CV116, and a value of eight for CV117.

Putting a DCC decoder in a brass diesel isn't that much more difficult than a plastic-and-metal locomotive. You just need to take your time, make sure all wire connections are insulated, and check your work carefully along the way. MR



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## **Product Reviews**



## Powerful performance in DC and DCC highlight HO scale brass hybrid 2-10-2

Before the introduction of the Challenger and Big Boy types, the class TTT 2-10-2 was the premier heavy freighter on the Union Pacific RR. The HO scale UP class TTT-6 from Broadway Limited Imports features brass, metal, and plastic construction and a dual-mode Digital Command Control sound decoder that operates on DC or DCC layouts.

Class TTT. Although called Santa Fe types on other railroads, locomotives with a 2-10-2 wheel arrangement were known as class TTT (Two-Ten-Two) on the Union Pacific RR. Between 1917 and 1924 the railroad received a total of 144 class TTT locomotives in seven subclasses. Alco, Baldwin, and Lima built 2-10-2s for the UP.

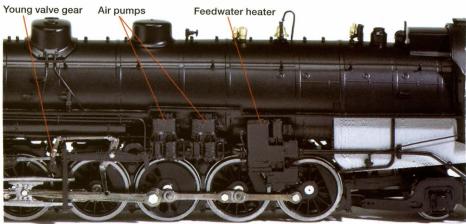
There were many variations between the TTT subclasses, including several different feedwater heater types, Walschaerts or Young valve gear, and different tenders. Some were coal-fired, while others were oil-fired.

The TTTs were originally developed to handle freight over the 1.14 percent Ogden-Wasatch grade without additional helper engines. These locomotives served across the UP system into the 1950s until the end of the steam era. The BLI model represents UP class TTT-6 locomotives delivered by Baldwin in 1923 as they appeared late in their careers.

**The model.** Called a "hybrid" by BLI, the model is built mainly out of brass with many separately applied metal and plastic detail parts. The BLI UP class TTT-6 is an accurate HO model of the prototype as it looked during the 1950s.

All dimensions of the locomotive and tender match those in *Motive Power of the Union Pacific* by William Kratville (Barnhart Press). Placement of boiler appliances matches those found in descriptions of UP TTT-6 locomotives in the Union Pacific Historical Society's *The Streamliner vol.4 no.1*. The locomotive's Vanderbilt tender has a water tank with a rectangular extension that raised the tank's capacity to 13,500 gallons.





The model has Young valve gear, dual air pumps, and a Worthington 4 BL feedwater heater that are all appropriate for its prototype.

#### HO Union Pacific 2-10-2

Price: \$450.00 Manufacturer

Broadway Limited Imports, LLC 4 Signal Ave Ormond Beach, FL 32174 www.broadway-limited.com

Road numbers: (all Union Pacific) 5509, 5044, 5053, 5507, and undecorated

#### **Features**

Drawbar pull: 6 ounces
Dual-mode DCC sound decoder
Electrical pickup on all drivers
and tender wheels
Five-pole skew-wound motor
with brass flywheel
Kadee magnetic knuckle
couplers at correct height
Minimum radius: 22"
Painted metal locomotive and
tender wheels in gauge
Sprung drivers
Weight: 1 pound 131/2 ounces
(locomotive and tender), 1

All the BLI models feature this tender, Young valve gear, and Worthington 4 BL feedwater heaters. Some models include an optional snowplow front pilot. Most of the models have coal tenders, though our review sample represents the oil-fired no. 5509.

pound 7 ounces (locomotive)

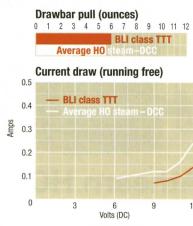
The cab interior includes painted engineer and fireman figures. The stoker-free backhead is appropriate for the oil-fired prototype.

A powerful puller. The five-pole skew-wound can motor and brass flywheel are housed inside the locomotive boiler. The motor is connected via a gearbox to the third set of drivers, while the other drivers are turned by the side rods.

None of the drivers has traction tires. However, the weight of this mostly metal model and its powerful motor give the BLI 2-10-2 an

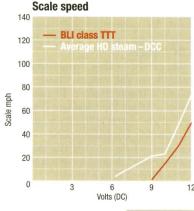
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	Draw when slipping	Draw when stalled
BLI class TTT	.20A	.60A
Average HO steam – DCC	.33A	.67A

"Average" data based on comparable locomotives reviewed recently



	Minimum sustained speed
BLI class TTT	1.0 mph
Average HO steam - DCC	3.5 mph



The rear of the tender has a backup light and red marker light.

impressive drawbar pull equivalent to 84 HO scale freight cars on straight and level track.

The locomotive drawbar has two holes to connect the tender, the farthest hole allows the 2-10-2 to negotiate a 22" radius curve, while another hole allows for closer coupling. A six-wire cable connects the dual-mode decoder and sound system in the tender to the locomotive. A downward-facing speaker is mounted inside the tender.

**Dual-mode effects.** The BLI model includes a dual-mode QSI Quantum decoder that provides sound in



The cab interior has a backhead appropriate for an oil burner.

both DC and DCC modes. At rest the model's random sound effects include the air pumps, safety valves, and injector.

As the locomotive started moving the sound of four chuffs per wheel revolution were synchronized to the motion of the drivers. There's also the separate hiss of the open cylinder cocks until the locomotive reaches about 12 scale mph. (Function 7 arms the open cylinder cock feature.)

The class TTT has a shrill UP freight whistle. The bell has the staccato sound of the mechanical internal-clapper type bell ringer

#### **Product Reviews**

that replaced the original rocker type ringer.

You can trigger the whistle and bell as well as program some sound effects in DC mode using the power pack or a Quantum Engineer analog DC controller (sold separately). More options are available to DCC users.

There are 13 DCC functions available on the model. These include a Doppler effect (Function 6) and a heavy load feature (Function 9). The latter allows you to keep the locomotive's speed constant, while making the engine chuffs more labored as when the locomotive climbs a grade.

All lighting effects also operate in DC and DCC modes and are provided by light-emitting diodes, including a cab light and constant headlight. In reverse the headlight dims and the tender backup light and red marker light shines. On the prototype the marker light was used only when the locomotive ran without any cars behind it.

In DCC I adjusted many of the model's configuration variables (CVs), including its long address and the volume levels of individual sounds. A QSI user's manual that lists all the CVs is available online at www.broadway-limited.com.

**Speed tests.** In DC and DCC modes the BLI 2-10-2 features silky smooth operation without any hesitation even at its slowest speeds. The biggest drawback of the model for DC users is that it takes a lot of voltage to get under way.

The model didn't start moving in DC until I advanced the throttle of an MRC Tech 4 power pack to 9 volts. The BLI steamer crept along at 1 scale mph and accelerated smoothly to a top speed of 50 scale mph at 12 volts.

Using an NCE Powercab DCC system, I ran the model in speed step 1 at 1 scale mph. The locomotive accelerated to a top speed of 57 scale mph at speed step 28, which is close to the prototype's top speed of 60 mph. The BLI class TTT also supports 128 speed steps for more precise speed control.

With its accurate detailing and powerful mechanism, the BLI class TTT would make a great addition to an HO scale UP steam roster. – Dana Kawala, associate editor



## Athearn HO corn syrup tank car is big on detail

An 8,000-gallon tank car based on the North American Car Co. (NACC) prototype is the latest offering from Athearn Trains. These compact tank cars were designed to transport corn syrup.

Why so small? Dedicated corn syrup tank cars were first built in the 1960s and are still a part of the modern railroad scene. The early cars ranged in capacity from 16,800- to 17,600-gallons, while the modern tank cars have a 19,600-gallon capacity.

However, not all customers can receive such large shipments of corn syrup. To accommodate smaller deliveries, NACC built these 8,000-gallon tank cars.

Small car, big details. Athearn's car has a one-piece injection-molded plastic tank with separate tank heads. The manway, safety valve, and ladder are plastic; the manway platforms are etched metal; and the railings are wire. The bottom of the tank features plastic outlet valve details and a formed wire train line with brackets.

The end frames are die-cast metal and include the bolster pin and draft-gear box. The etchedmetal crossover platforms and separately applied wire grab irons are nice touches. However, the castings on our sample were a bit rough and the paint was thick.

The McHenry Type SF doubleshelf couplers are appropriate for this model. They're mounted at the correct height.

#### H0 8,000-gallon tank car

Price: \$27.98
Manufacturer
Athearn Trains
1550 Glenn Curtiss St.
Carson, CA 90746
www.athearn.com

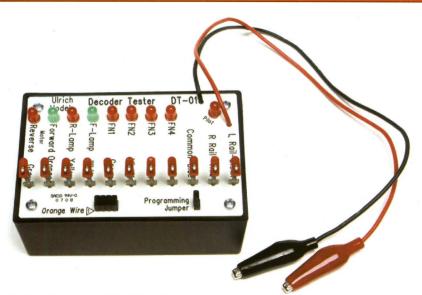
Road names (two road numbers each): General Electric Rail Services Corp., General American Marks Co., Union Carbide Corp., and Union Tank Car Co. Undecorated version also available

**Our sample,** decorated for Union Tank Car Co., features smooth and evenly applied paint on the tank and crisp, opaque lettering.

The model measures 31 scale feet over the coupler pulling faces, is 15'-3" tall (top of railhead to top of platform railing), and has an extreme width of 10'-3". The trucks are on 15'-3" centers. There are no published drawings of this car.

The model weighs 2.8 ounces, which is correct per National Model Railroad Association Recommended Practice 20.1. Three of the four wheelsets were .006" out of gauge. To fix this, I twisted the metal wheels, mounted on plastic axles, into gauge.

Athearn's 8,000-gallon tank car is a well detailed model. These cars would look great parked at an industry requiring small shipments of corn syrup. – *Cody Grivno*, associate editor



## Ulrich DCC tester works with all types of decoders

This easy-to-use product from Ulrich Models lets you test and program National Model Railroad Association-recommended Digital Command Control decoders before installing them in your models.

The Ulrich decoder tester measures 1½" x 2½" x 4" and has two leads that you connect to the track of your Digital Command Control-equipped layout or programming track. I connected the leads to a test track, which was controlled by an MRC Prodigy Advance DCC system.

The top of the unit has nine indicator lamps. The lamp marked "PILOT" lights when the tester is receiving track power. Other lamps indicate if the decoder's light and motor outputs, both forward and reverse, are operating correctly.

A socket on top of the Ulrich tester is used to connect decoders that have an eight-pin plug. There are also 10 spring clips used to test decoders that have a wire harness without a plug. Each spring clip is labeled for the color of its corresponding decoder wire. A 9-pin adapter harness for decoders with 9-pin plugs and a decoder clip harness, used to test board-replacement decoders that aren't pre-wired, are available separately.

With the power off on our DCC system, I used the clip harness to connect a QSI Revolution-A sound decoder to the tester. The Ulrich

#### DCC decoder tester

Price: \$39.95; JST 9-pin adapter harness, \$6.95; decoder clip harness, \$19.95

Manufacturer Ulrich Models 3133 Indian Road Boulder, CO 80301 www.ulrichmodels.biz

tester doesn't have a built-in speaker. To hear the decoder's sound effects and make sure they all functioned properly, I first wired a ½"-diameter speaker to the decoder.

The wires on the harness are color coded per NMRA RP-9.1.1. Following the decoder's wiring diagram, I fastened the springloaded clip at the end of each wire to its corresponding connection on the decoder. Then I used the MRC Prodigy cab to trigger the QSI decoder's functions, including the horn, coupler sound, and bell. The diesel RPM sounds increased or decreased as I operated the throttle. I changed several of the decoder's configuration variables, including its long address.

If you're planning to upgrade your locomotives to DCC, the Ulrich Models decoder tester is a useful tool to have on your workbench. – *D.K.* 

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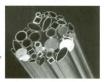
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#### **Product Reviews**



## Smooth running Atlas N scale GP15-1 models a rebuilt diesel road switcher

#### A light-duty Electro-Motive

Division road switcher built to work yards or haul short local freights is now available as an accurate N scale model. The Atlas GP15-1 features exceptional performance, especially at slow speeds, and can be easily converted to Digital Command Control.

**Prototype.** By the 1970s railroads began using their own shops to rebuild GP7s and GP9s for lightduty work, such as switching or making transfer runs. General Motors Electro-Motive Division designed the GP15-1, essentially a road switcher version of the firm's MP15 switcher, to compete with these rebuilding programs.

A new GP15-1 was available only with the trade-in of an older Geep. Electro-Motive remanufactured the older diesel's trucks, traction motors, and main generators for use on the new locomotive.

The 1,500-hp GP15-1 diesels had a normally aspirated (non-turbocharged) engine. An AC version (GP15AC) and turbocharged version (GP15T) were also available.

The first 25 GP15-1s were delivered to the Chicago & Northwestern in 1976. Receiving 100 GP15-1's in 1979, Conrail had the largest fleet of these rebuilt Geeps. Many GP15-1 diesels remain in service today on railroads around the country.

All the dimensions of the Atlas N scale GP15-1 match prototype drawings in the January 1990 *Model Railroader*.

Appearance. The model's body shell is made of plastic, and all cab windows have clear window glazing. Molded-in details on the body and the plastic "GP type" truck sideframes are well-defined and match prototype photos. The shell features an inertial air filter on the roof behind the cab, which is correct for Conrail and Missouri Pacific prototypes.

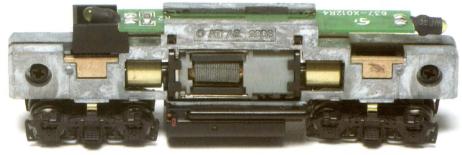
All the GP15-1's handrails are separately applied and made of flexible engineering plastic. These parts have in-scale profiles.

Paint coverage on the model is smooth and lettering placement is correct per prototype photos. Painted details include the fuel filler cap and emergency shut-off on the side sill (painted red), and the cab window frames (painted silver.) All handrails are blue, although some prototype photos show Conrail GP15-1's with the handrails at the stairwells painted white.

Under the hood. I easily lifted off the press-fit body shell from the model's split die-cast metal frame. The motor and two brass flywheels are encased in the middle of the frame. The motor turns two worm gear shafts that transfer power to gearboxes above each truck.

A printed-circuit (PC) board is mounted on top of the frame and has a golden white light-emitting diode on each end to illuminate the headlights, which operate according to the locomotive's direction.

The GP15-1 is easy to convert to Digital Command Control. Simply loosen the screws at each end of the frame and remove the PC board.



A dual-flywheel-equipped motor powers the GP15-1. The printed-circuit board atop the die-cast frame can be replaced with a DCC decoder.

#### Atlas N scale GP15-1

Price: \$79.95 (undecorated \$74.95)

#### Manufacturer

Atlas Model Railroad Co. 378 Florence Ave Hillside, NJ 07205 www.atlasrr.com

Road names (two road numbers): Conrail, Burlington Northern, California Northern, Chicago & North Western, CSX, St. Louis-San Francisco, Missouri Pacific, Norfolk Southern, Union **Pacific** 

#### **Features**

Blackened metal RP-25 contour wheels in gauge **Body-mounted Accumate** magnetic knuckle couplers at correct height

Drawbar pull: .48 ounces Eight-wheel drive and electrical pickup

Five-pole skew-wound motor with dual brass flywheels Minimum radius: 93/4" Weight: 3 ounces

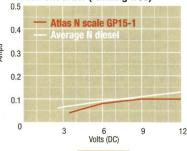
The inertial air filter located on the roof behind the cab is a spotting feature of Conrail GP15-1 diesels.

Then replace the PC board with an appropriate drop-in DCC decoder and tighten the screws. Both the Digitrax DN163A2 and the Train Control Systems ASD4 are examples of decoders that will work with this model.

Running the Geep. Out of the box the model didn't start moving until almost 5 volts were applied to the track. However, the N scale Geep's

**Drawbar pull (ounces)**0 .2 .4 .6 .8 1.0 1.2 1.4 1.6 1.8 2.0 Atlas N scale GP15-1 Average N diesel

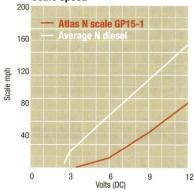
#### Current draw (running free)



	Draw when slipping	Draw when stalled
Atlas N scale GP15-1	.18 A	.26A
Average N diesel	.18A	.40A

<sup>&</sup>quot;Average" data based on comparable locomotives reviewed recently

#### Scale speed



	sustained speed	
Atlas N scale GP15-1	0.4 mph	
Average N diesel	4.7 mph	

performance improved greatly after a few minutes of running time on our test track.

After this brief break-in period, the GP15-1 had a starting speed under .5 scale mph at 3.5 volts. The model accelerated smoothly to a top speed of 80 mph at 12 volts. This speed is the same as that for one of the gear ratios available on the prototype.

The N scale GP15-1 easily negotiated 93/4" curves. Thanks to its eight-wheel electrical pickup. the model's headlight didn't flicker as I ran the Atlas GP15-1 through no. 4 turnouts.

With its accurate details and smooth performance, this GP15-1 is an excellent N scale replica of its light-duty prototype. – D.K.

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#### **Product Reviews**

#### Walthers HO scale grain storage bin kit

Price: \$47.98 Manufacturer

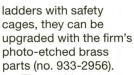
Wm.K. Walthers Inc. P.O. Box 3039 Milwaukee, WI 53201 www.walthers.com

Comments: This wet/ dry grain storage bin (no. 933-2937) is part of Walthers' new Modern Grain Series. Each kit contains enough parts to build two bins.

If there is one word that best describes this kit, it's detail. The base has 18 legs and a corresponding number of lattice supports. In terms of assembly, this was the most time-consuming

part to work on.

The grain bin consists of nine plastic vertical side sheets with crisp corrugation and fine bolt detail. A vertical column hides the seam between each sheet. Though this kit includes plastic



The roof features a molded ladder and inspection hatch, four vents (two-piece assemblies), and an inlet manifold. The latter is designed to press-fit into the roof so piping from the Walthers grain conveyor (no. 933-2936, sold separately) can be added.

Though the bin has a 35/8"-square footprint, it's an impressive 12"

high (86'-6" in HO scale). This size bin would be typical at a larger elevator or an ethanol plant.

Precision is everything with this kit, so take your time and read the instructions carefully. The finished bins will look great in a modern elevator scene. - C.G.

#### Atlas N scale code 65 sectional track with roadbed

Price: \$8.50 to \$19.95 Manufacturer

Atlas Model Railroad Co. 378 Florence Ave. Hillside, NJ 07205 www.atlasrr.com

Comments: Sectional track with painted plastic roadbed is the latest N scale track system from Atlas. The firm's N True-Track comes with code 65 nickel-silver rail mounted on one-piece molded plastic roadbed.

The tops of the molded ties are painted dark brown, and the light grayish-tan ballast is flecked with black. The ties have molded-in wood grain and spike detail.

The track snapped together easily on a smooth tabletop, with no difficulty aligning rail joiners. A string of cars with oversized wheel flanges had no problem negotiating the turnouts.

The track is offered in 2" and 6" straight pieces, curve seg-



ments in 11" and 121/2" radii. and powered turnouts.

Our sample turnouts were easy to connect and worked reliably. The dimensions of the turnouts and other segments all matched National Model Railroad Association RP-2 for track.

Atlas N True-Track would be good for a beginning modeler or anyone seeking good-looking, easy-to-assemble track. -Steven Otte, associate editor

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#### **Product Reviews**

#### Kato N scale Southern Pacific Alco PA-1 and PB-1



Price: \$95.00 Manufacturer

Kato U.S.A. Inc.

100 Remington Rd. Schaumburg, IL 60173 www.katousa.com

Comments: An upgraded N scale Alco PA-1 and powered PB-1 are available from Kato in the Southern Pacific *Daylight* paint scheme. The colors and striping match the Kato N scale *Morning Daylight*, reviewed in the July 2008 *Model Railroader*. Unlike those cars the PA has the post-1946 SP *Daylight* lettering scheme.

The PA has the same mechanism as when we last reviewed it in the September 1998 *Model Railroader*. The model now has illuminated number boxes.

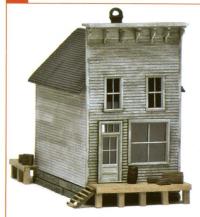
The model comes with a printed-circuit (PC) board mounted on top of the frame. The headlight is a light-emitting diode. The model can be converted to Digital Command Control by replacing the PC board with a Digitrax DN163K0A decoder.

All the blackened metal RP-25 contour wheels are in gauge and the Kato operating knuckle couplers are at the correct height.

At 2 volts the model started moving at .7 scale mph and accelerated smoothly to 170 scale mph at 12 volts. The prototype had a top speed of 120 mph.

A single Kato PA-1 has a one ounce drawbar pull, equivalent to about 14 N scale passenger cars on straight and level track. – *D.K.* 

#### BEST Trains HO scale bookstore wood kit



Price: \$69.95 Manufacturer

Bollinger Edgerly Scale Trains 375 Bean Hill Rd. Belmont, NH 03220

Comments: Ogden's Bookstore is loosely based on a structure in the gold mining ghost town of Bodie, Calif. In addition to the laser-cut wood walls, the kit includes injection-molded doors and windows, peel-and-stick shingles, copper flashing, a cast-

plaster foundation, and whitemetal detail parts. The structure's footprint is  $2^{3}/_{4}$ " x  $5^{1}/_{4}$ ".

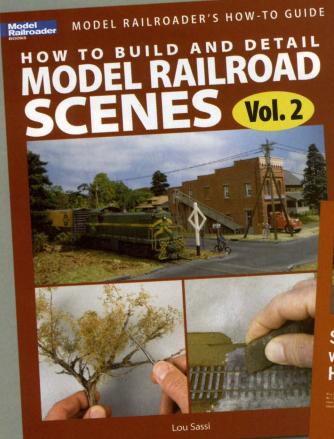
The kit is easy to assemble thanks to clear and well-illustrated step-by-step instructions. Since the kit includes a variety of stripwood for the modeler to cut, it's a good idea to have a miter box, razor saw, and some sanding sticks handy.

The peel-and-stick shingles adhere well to the cardstock subroof. To help keep the shingles in even rows, the manufacturer has supplied a spacing guide that can be attached to the cardstock with double-sided tape or a glue stick.

The kit also includes a few extras, such as a Jordan Highway Miniatures 1928 Ford Model A pickup kit and a sheet with tips for weathering wood.

Ogden's Bookstore follows an architectural style that would look appropriate on HO scale layouts set in the 19th or early 20th centuries. – *C.G.* 

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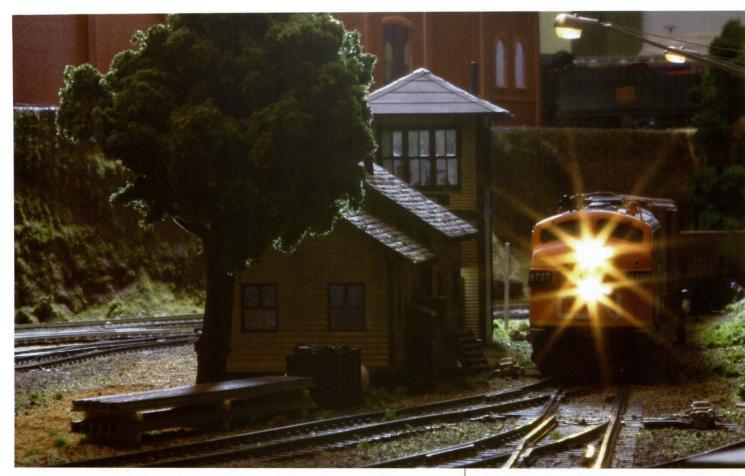
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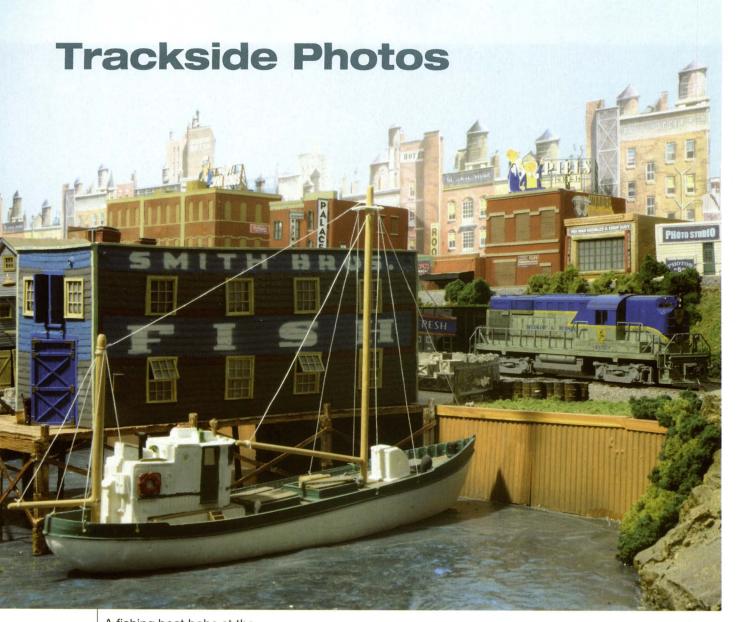


Boston & Maine 4-4-2
Atlantic no. 3205 blasts
across the high bridge on
Ken Robbins' HO layout,
which represents New
England in the 1950s. The
heavily modified Tenshodo
brass locomotive, which was
Model Railroader's Model of
the Month in December
1987, "still runs just fine,"
Ken reports. Ken, of Hancock, N.H., took the photo.

## Want to see your work in Trackside Photos?

Trackside Photos is a showcase for the work of *Model Railroader* readers. We encourage contributions. Send your photos (original color slides or digital images 5 megapixels or better on CD-ROM) to: *Model Railroader*, Trackside Photos, P.O. Box 1612, Waukesha, WI 53187-1612. Include caption information, such as a description of what's going on in the picture; the name, scale, era, and locale of the layout; and information about the rolling stock or structures pictured. For a copy of our photo submission guidelines, contact editorial associate Eric Stelpflug at 262-796-8776, ext. 583, or mrmag@mrmag.com.

Headlights glint off polished steel rails and streetlights flicker to life as Canadian National locomotive 9707 arrives at West City Yard at dusk. Gary Hamilton, of Edmonton, Alberta, Canada, upgraded the headlights in the HO scale Broadway Limited F units with superbright surface-mount light-emitting diodes. He also photographed the scene on his Meriachee Ry. & Navigation Co. layout.



A fishing boat bobs at the Smith Bros. Fish dock as a Delaware & Hudson Alco RS-11 leads the daily peddler along the shore of Katherine's Bay. The action takes place on the Beekmenville & Hudson Valley RR, a freelanced HO scale layout belonging to Robert Seckler of Poughquag, N.Y.

Lou Sassi photo

Lehigh & Hudson River Ry. Mikado no. 82 pulls an eastbound freight through northern New Jersey to an interchange with the New York, New Haven & Hartford at Maybrook, N.Y. Greg Liakakos of Point Pleasant, N.J., photographed the modified Kato N scale locomotive on the Jersey Central Ntrak club layout in Jamesburg, N.J.



The tail end of the local freight is almost clear of the crossing in Putney, N.Y., on John Bortle's HO scale Hudson Highlands layout. John, who lives in Stormville, N.Y., built the freelanced small town from an assortment of Bar Mills, Woodland Scenics, Life-Like, Design Preservation Models, and Laser-Kit structures. He also shot the photo.

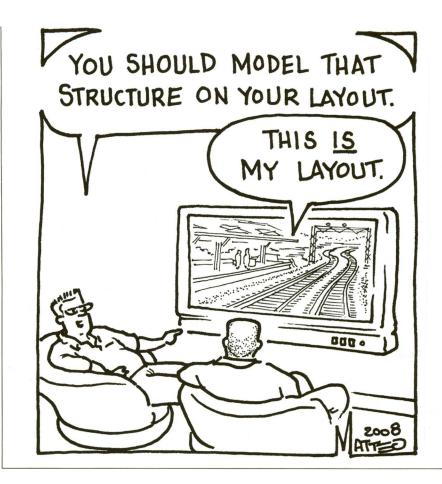


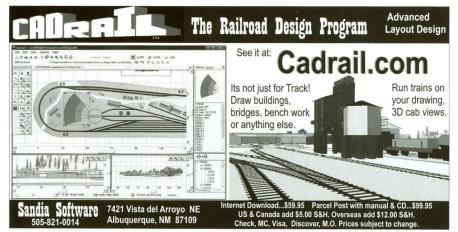


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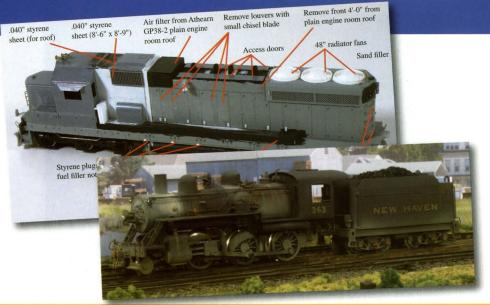








## Enter Model Railroader's locomotive kitbashing contest!



Show us a locomotive that you have modified to match a particular prototype – steam, diesel, or electric-type in any scale – and you can win one of three prizes!

First Prize: \$1,000 • Second Prize: \$500 • Third Prize: \$300 In addition, payments for the article will be made at our standard per-page rate.

#### Rules:

1. A kitbashed locomotive is described as a model steam, diesel, or electric-type locomotive that has been modified through the addition, removal, or alteration of its external parts to create a more accurate representation of a prototype locomotive. Typical modifications include replacement or alteration of the cab, boiler or hood, end platforms, headlight placement, tender, and running gear trucks, plus the addition of detail parts such as bells, horns, railings, and more. The parts can come from other locomotives or from specialty manufacturers, and can be altered as needed. Smaller elements of your locomotive project can be scratchbuilt if an appropriate part is not available. The degree to which a locomotive is modified is up to you.

- 2. Entries can be in any scale from Z scale through large scale (G scale).
- 3. The locomotive must operate and be able to pull a train on appropriate scale track.
- 4. Your submission must include:

A. An article of 1,500 to 2,500 words describing your inspiration for the kitbashing project and the techniques you used to modify your locomotive. Include a list of parts, paint, decals, and other materials used in your project. Manufacturers' part numbers and the manufacturer/source of the parts are required. One computer printout of the article (or a typed copy) is required. Include an electronic version of your text on a CD if possible.

B. Six to 12 publishable photos of the locomotive before and after modification taken at different angles while on a layout, diorama, or section of track with an appropriate

backdrop. Photos must have good depth of field (foreground and background are in focus). All photos should be original and can be slides, prints, color transparencies, or digital. Prints must be glossy and 5  $\times$  7 inches or larger. Digital images must be submitted on CD in RAW (preferred) or TIFF formats with a resolution of at least 300 dpi at 8  $\times$  10 inches. JPEG format images of 300 dpi or greater will be accepted, but JPEG files do not produce publishable images of the same quality as RAW or TIFF files. Computer printouts (do not need to be photo-quality) of all digital images are required to allow the contest judges to review each submission. Do not submit images via e-mail.

- C. Publishable photos of the kitbashing project while under construction, especially close-up photos showing the key elements described in your text.
- D. A photo of the prototype locomotive your kitbashed model represents.
- E. Captions for all photos, including details or techniques being illustrated.
- F. Drawings (if appropriate) to provide helpful information to a reader trying to duplicate your project. Neat pencil sketches are acceptable as well as computer-generated drawings. All illustrations will be reformatted by *Model Railroader*'s staff to fit the magazine's style should your story be published.
  - G. A brief biography and photo of yourself.
- Articles must be written and submitted by the entrant. You are not required to take your own photos, but you are responsible for compensating the photographer and securing all copyrights to the photos.

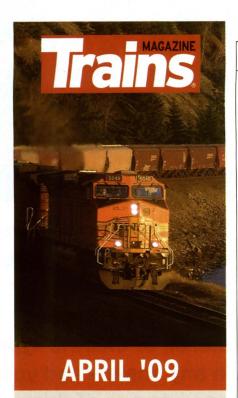
- 6. Each contestant is limited to one entry.
- 7. All entries must be received in *Model Railroader*'s offices no later than June 1, 2009.
- 8. Winning entries will be published beginning in late autumn, 2009. The first-prize winner is awarded \$1,000, second-prize winner is awarded \$500, and third-prize winner is awarded \$300. In addition, winning entrants will be paid for their kitbashing stories at our standard publishing rates.
- 9. All winning entries become the property of *Model Railroader* magazine.
- 10. Model Railroader reserves the right to purchase any non-winning entries at our standard rate for future publication.
- 11. Non-winning entries not selected for purchase will be returned only if appropriate packaging and postage are supplied by the entrant at time of submission.
- 12. Kalmbach Publishing Co. employees and members of their immediate families are not eligible to enter this contest.
- 13. Judging will be conducted by the Model Railroader staff.
- 14. Model Railroader reserves the right to not award all prizes and to withdraw any awards.

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#### **Trains of Thought**

#### So many choices...

**Tony Koester** 



Tony has enjoyed almost a full decade of planning, building, and operating his Nickel Plate HO layout. Is it time to upgrade to a larger scale, maybe three-rail O? Tony Koester photo

Despite the fact that I dismantled the Allegheny Midland almost a decade go, I still run into modelers who ask me how the AM "is doing," or they wonder aloud how I had the unmitigated gall to dismantle that railroad.

The polite answer is that the railroad had resided in my basement for a quarter of a century, and it was clearly time to move on. Moreover, as the co-founder of the Nickel Plate Road Historical & Technical Society, it was just as clearly time for me to pay tribute to this remarkable railroad by modeling a segment thereof. Ergo, the Third Subdivision of the St. Louis Division of the Clover Leaf District of the - pant, pant - New York, Chicago & St. Louis RR, otherwise known as the Nickel Plate. (Give me a minute here: I need to rest.)

Where were we? Oh, yes - we were chatting about why the AM came down and the NKP went up. Truth to tell, I suspect it had more to do with a short attention span. Hey, I had been there, done that, on an Appalachian coal railroad for 25 years. Enough is enough already!

Which brings us to today. (More about what "today" is in a moment.) I've been planning, building, and now operating the Third Sub for almost a decade. The main goal was to re-create a timetable and train-order railroad environment so that I could relive the glory days of steam and "dark" (no block signals) railroading.

I'm happy to report that that particular goal, as well as the related goals of modeling a specific prototype and the NKP in particular, has been achieved. I have planted the flag and declared victory!

So now what?

Some long-time readers of this column may recall that I got my start in miniature railroading when my parents gave me a Lionel O-27 train set for Christmas when I was "this many fingers" old. To this day, I admire the mass of O scale models and the troublefree operation of three-rail.

None of us is getting any younger, and those of us of a certain age have noticed that we no longer have an unlimited number of years to take care of the unchecked items on our personal "bucket lists." Judy and I have been fortunate enough to check off quite a few of the must-do and even many of the like-to-do items on our lists, but there are a few pesky unchecked boxes that I probably should attend to.

To wit: Build a big O scale model railroad.

Alas, one's wishes are not always in line with one's resources. In my case, I still have an HO-size basement. To be sure, I could probably build an O or even "large-scale" railroad down there if I really had to, but I've enjoyed the challenges of making trainmovement decisions in a timetable operating environment too much to simply walk away from that. And modeling the NKP has been a highly rewarding experience.

But what would happen, I wondered to myself, if I went back to three-rail? There are many great-looking and -running "O gauge" locomotives out there, including NKP Berkshires and Alco PA-1s. They take much sharper curves with ease than their scale-wheeled counterparts, so I could cram a lot more track into my basement.

Who could pass up such an opportunity? To be sure, abandoning my newly built HO empire will be painful. But I've gotten through a similar experience with the Allegheny Midland, and know I will survive, even prosper as the challenges of the new railroad are met head on!

And, as the saying goes, if not now, when?

To pay for the new railroad, I've put my HO stuff up for sale. The prices are high, but frankly, I need the money. Besides, once something has appeared in the pages of *Model Railroader*, I've found, it can usually command a higher price than a model of lesser fame. Should you be interested in acquiring some of my HO stuff, please go to my Web page at www.ModelRailroader.com/TonysAprilFoolsJoke.

So, I'm off to plan my new layout. I'll see you next month, when "today" isn't a particular day in the month of April. MR

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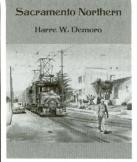
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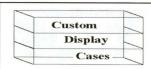


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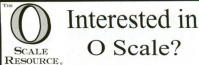
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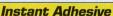


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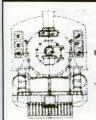
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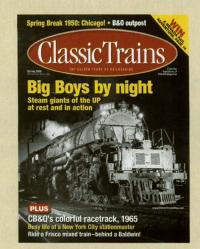
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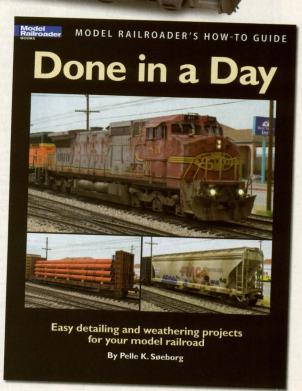
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Schedule of Events Rate: \$25 per issue (45 word maximum). Ads will contain the following information about the event: State, City, Sponsoring organization and name of event, meet, auction or show, dates, location, times, admission fee, name and/or telephone number and/or email of person to contact for information. Name, daytime telephone number and street address of the person providing the information is also required but need not be included in the ad. Unless otherwise requested, ads will be published in the issue month that the event occurs in. Additional months are available at the \$25 per issue face [3].

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CLOSING DATES: Jan 2009 issue closes Oct. 17, Feb. closes Nov 18, Mar. closes Dec. 16, Apr. closes Jan. 16, May closes Feb. 16, June closes Mar. 20, July closes Apr. 17, Aug. closes May 15, Sept. closes June 18, Oct. closes July 17, Nov. closes Aug. 18, Dec. closes Sept. 18.

Note to Readers: Show dates, times and locations sometimes change. Confirm the details before driving any distance. Please go to www.mrmag.com and click on the **Schedule of Events** section to get more complete information on these and other coming events.

#### Schedule of Events

CA, SIMI VALLEY: SWAP MEET. Santa Susana Railroad Historical Society, 6503 Katherine Rd. March 28, 2009, 7:00am-10:00am. \$2.00 donation, kids free. Open house 10:00am-4:00pm. All scales, scenery, books, photos plus vintage diesel horn demonstration. www.santasusannadepot.org for info and table availability contact: events@santasusannadepot.org 661-252-0852.

CO. GREELEY: 2009 BOCKY MOUNTAIN REGION NMRA CONVENTION: Greeley Clarion Hotel, 701 8th Street. May 21-24, 2009, Info: www.2009-rmr-nmra.org

FL, DELAND: 27TH FLORIDA RAILFAIR. Volusia County Fairgrounds. Tommy Lawrence Arena and Townsend Exhibit Hall. Saturday, April 11, 2009, 9:00am-4:00pm. Adults \$6.00 (under 12 free). Operating layouts. Miller, 3106 N. Rochester St., Arlington, VA 22213. 703-536-2954.

#### FL. FORT MYERS: GULF COAST EXPRESS III - NMRA SUNSHINE REGION SPRING CONVEN-

TION Clarion Hotel, 12635 S. Cleveland Ave. May 8-10, 2009. Fourteen clinics, operating session, model contests, special spouse events and layout tours. Non NMRA members welcome. Contact: Peter Gross 239-731-3645 or visit our website: www.scalerails.org

FL, LARGO: SUNCOAST MODEL RAILROAD CLUB TRAIN SHOW AND OPEN HOUSE. Minnreg Hall, 6340 126th Avenue. April 25-26, 2009, 10:00am-4:00pm. Adults \$5.00, children 12-17 \$1.00, under 12 free. Large model train and railroadiana show with over 100 tables. Parking free. www.suncoastmrrc.com for info and flyers.

FL, PINELLAS PARK: 56TH TRAIN SHOW. H&R Trains, 6901 U.S. Hwy. 19 N. March 27, 28, 29, 2009. Friday and Saturday 10:00am-9:00pm, Sunday 10:00am-6:00pm. Free admission. Contact Alice or Don Morris or David Beiter 727-526-4682, Fax: 727-526-3439, Internet: www.hrtrains.com

IL, DECATUR: DECATUR TRAIN FAIR 2009 Decatur Civic Center, 1 Gary K Anderson Plaza, Corner of Eldorado Street and Franklin Street. April 18-19, 2009. Saturday 10:00am to 5:00pm, Sunday 10:00am to 4:00pm. Adults \$4,00, under 12 free with adult. Steven Bricker 217-864-4397, sabricker@comcast.net

IL, SPRINGFIELD: SPRINGFIELD TRAIN FAIR. III., 3-FRINGFIELD: 3-FRINGFIELD THAIN FAIN.

Illinois State Fair Grounds, Orr Building, Sunday, April 5, 2009. 10:00am-4:00pm. \$4.00 per person, 10 and under free. Swap Meet/ Vendors/ Layouts/ Door Prizes/ Concessions. Free Parking, Sponsored by Springfield Model Railroad Club. Contact Tracy Bailey at springfieldmodelrailroadclub@yahoo.com

MA, HINGHAM: SOUTH SHORE MODEL RAIL-WAY CLUB SPRING OPEN HOUSE/SHOW. Bare Cove Park, Building 51, 19 Fort Hill Street. March 21-22, 2009, 9:00am-4:00pm. Dealers, operating layouts, white elephant table, free parking, handicap accessible. Adults \$5.00, child/senior \$2.00, 4/under free. Jack Foley, www.ssmrc.org 781-740-2000 Fax: 781-740-8900.

MD, TIMONIUM: GREAT SCALE MODEL TRAIN PLUS HIRAIL & COLLECTIBLE TRAIN SHOW.

Maryland State Fairgrounds, April 4-5, 2009, Saturday
9:00-4:00pm, Sunday 10:00-4:00pm, Adults \$9.00, family \$18.00, under 15 free, good for both days, includes
\$10.00 in coupons. Free parking, Howard Zane 410-730-1036, hzane1@comcast.net www.GSMTS.com

#### MI, MT. PLEASANT: MID-MICHIGAN 29TH MODEL

TRAIN SHOW Central Michigan University, Finch Fieldhouse on Preston St. March 29, 2009, 11:00am-4:00pm; Admission \$4.00, children under 10 free. Sponsored by Dog Tales Therapy Dog, Children READ Program and the Clare Depot Preservation. Contact: Larry Lewis 989-386-6987.

MN, ST. CLOUD: GRANITE CITY TRAIN SHOW AND SALE. National Guard Armory, 1710 Veteran's Drive: Saturday, April 25, 2009, 9:00am-3:30pm. \$4.00, 12/under free. Buy/sell model/toy trains, books, videos, railroad collectibles. Operating displays. Children's railway play area. Door prizes, for visitors and vendors. 320-255-0033; edwardolson@cloudnet.com; www.granitecitytrainshow.com

#### MO, JOPLIN: MUSEUM COMPLEX TRAIN SHOW

AND SWAP MEET Schifferdecker Park, 7th Street & Schifferdecker between the golf course and pool. Saturday, March 28, 2009, 8:00am-3:00pm. \$3.00 adult, under 12 freick Gardner, 11486 County Ln. 214, Oronogo, MO 64855; 417-673-4888 or e-mail rickgardner@sofnet.com

NE, NORTH PLATTE: "RAIL FEST" September 18, 19 & 20, 2009. America's premier railroad event! Tour the world's largest railroad yard and visit the Golden Spike Tower for an aerial view of Bailey Yards. Visit: www.nprailfest.com or call 308-534-3648.

NE, OMAHA: NMRA WESTERN HERITAGE DIVI-SION ANNUAL MEET. Burke High, 120th & Dodge. April 25, 2009 9:00am-5:00pm; April 26, 2009 10:00am-4:00pm. Swap meet, clinics, layouts, door prizes, model contests. \$5.00 adults, \$4.00 3 to 12. Contact Barb Lunquist, 402-597-3988, blundquist1@cox.net

OH, BRADFORD: BRADFORD OHIO RAILROAD PESTIVAL AND TRAIN SWAP MEET Bradford School. 750 Railroad Avenue. Saturday June 20, 2009. 9am-5pm Adults \$4, Children and Seniors \$2, Family \$10. Exhibits, Models, Tours and Children play area. Contact: Marilyn Kosier: 740-654-0177; mkosier@rrohio.com or visit www.bradfordrrmuseum.org for information.

OH, BUCYRUS: BUCYRUS MODEL RAILROAD ASSOC. TRAIN SHOW AND SWAP MEET. Crawford County Fairgrounds, Whetstone St. Saturday, April 11, 2009 10:00am-4:00pm. Adults \$4.00, children 12 and under free. Club layout open, videos, memorabilia, model train parts. Contact: Dave Moore 419-462-5035.

OH, COLUMBUS: OHIO N SCALE WEEKEND.
"For N-Scalers by N-Scalers" Franklin County Fairgrounds, Hilliard, Ohio. Presented by Central Ohio N-Trak, Saturday May 2nd 10:00am-5:00pm, Sunday May 3rd 9:00am-3:00pm, Set-up Friday May 1st 1:00pm-8:00pm, Event registration \$10.00. Event info: David White 614-991-4547, dcwizard@wowway.com or visit centralohiontrak.org

OH, MILAN: NORWALK & WESTERN MODEL RR CLUB TRAIN & TOY SHOW. Enove Career Center, 316 W. Mason Rd. (1/4 mile north of Ohio Turnpike Exit 118). March 29, 2009, 10:00am-3:00pm. Admission: 12 and over \$3.00. Contact Tony Catelano, PO Box 938, Norwalk, OH 44857-0938, 419-499-4856.

OH, OLMSTED FALLS: CUYAHOGA VALLEY & WEST SHORE MODEL RAILROAD CLUB ANNUAL SPRING OPEN HOUSE The Olmsted Falls Depot, 25802 Garfield Blvd, April 18 & 19, 2009, 12:00noon 5:00pm, Admission: \$2.00, kids freel Lionel, HO and N scale layouts, Information: Bill Cramer 440-572-3714, wmhcramer@vahoo.com

PA, GLENSIDE: SPRING FLING TRAIN SHOW. VFW Post 676, 2519 Jenkintown Rd. Saturday, March 7, 2009, 9:00am-2:00pm, 53.00 for adults, kids under 12 are free. Sponsored by the Marine Corps League. Information: March Charge 215, 644, 4080. Mark Carver 215-264-2869.

PA, HAWLEY: HAWLEY FIRE DEPT. TOY TRAIN SHOW & SALE. Hawley Fire Department, 10 Columbus Ave. April 19, 2009, 9:00am-3:00pm. Admission \$3.00, under 12 free with adult. Bill Delling, 618 Fern St., Hawley, PA 18428, 570-226-3206.

MONACA: BEAVER COUNTY MODEL RR SPRING TRAIN SHOW & SALE. Center Stage, 1495
Old Brodhead Road. Sunday, April 26th, 2009, 10:00am3:00pm. Adults \$4.00, under 12 free. Sponsored by
Beaver County Model RR & Historical Society. Contact:
Glenn Wallace 724-775-8023 or www.bcmrr.railfan.net or
info@bcmrr.railfan.net

NEW BRAUNFELS: MODEL RAILROAD "JAMBOREE 2009", New Braunfels Civic Center, 375
S. Castell Ave. March 21-22, 2009, Saturday, 9:00am5:00pm and Sunday 10:00am-4:00pm. Admission \$6.00
adults, \$2.00 teens (13-17), \$1.00 child (5-12). Info:
www.newbraunfelsrailroadmuseum.org Jerry Garteiser, PO
Box 310475, New Braunfels, TX 78131-0475; 830-438-7725, jerryg@gvtc.com

WA. OLYMPIA: OLYMPIA CAPITOL CITY LIONS 24TH ANNUAL ALL SCALES MODEL RAILROAD

SWAP MEET. Thurston County Fairgrounds, 3054 Carpenter Road SE. Saturday, March 21, 2009, 10:00am-3:00pm. Adults \$6.00, seniors/students \$4.00, 12 and under free w/adult. Bill Zidel, 5143 Blacktail Ct. NE, Olympia, WA 98516, 360-438-3503, ZIDELRCSD@aol.com

WI, LA CROSSE: LA CROSSE AND THREE RIV-ERS 28TH ANNUAL MODEL RAILROAD SHOW. La Crosse Center, 2nd and Pearl St. March 21-22, 2009. Saturday 10:00am-6:00pm, Sunday 10:00am-4:00pm, Adults \$5.00, children 11 and under free w/adult. Mark Bell, 6836 State Highway 26, La Crescent, MN 55947, 608-797-4964.

WI, STANLEY: TRAIN SHOW & SWAP Located at the Stanley-Boyd High School. Saturday, April 19th, 2009. Open from 9am to 3pm. Admission FREE. Vendors call John at: 715-644-2438 for set up information.

#### Classifieds

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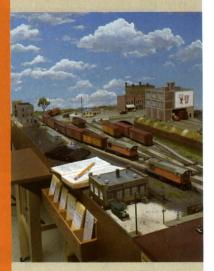
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MAGAZINE

#### Andy Sperandeo

## The Operators



This four-unit set of matched F7s is headed away from us, pushing a Baltimore & Ohio coal train up West Virginia's Cranberry Grade from behind the sturdy steel wagon-top caboose. The flag on the side of the nearest cab unit is a marker indicating the rear of the train. H.W. Pontin photo

#### **Helper operations**

Helper operations on model railroads can transform an operating problem – a grade steep enough to limit train length – into an operating highlight. It's perfectly realistic to get long and heavy trains over a steep section of line by adding extra locomotives, whether steam, diesel, or electric. Before today's radio-controlled distributed power units (DPUs), those added locomotives most often had their own crews who worked as a team with the road engine crews to get trains over the railroad's Big Hill.

Digital Command Control makes it easy to independently control two or more locomotives on one train. That makes helper service an opportunity that can add excitement to your railroad's operations.

Double-heading, with the helper in front of the road engine, is the simplest way to add power to a train. This was often done on passenger trains, but was used on freights too. However, too much power applied from the head end might exceed the strength of freight car draft gear.

Draft gear limitations aren't a problem on model railroads, but our sharp curves can introduce another difficulty, "stringlining." That's when the power up front and the load behind are each great enough to pull cars off the inside of a curve, as if drawing a straight line between points along the arc.

Pushers at the rear of the train reduce the strain on prototype draft gear since many drawbars are in compression instead of tension. Having part of the train pushed rather than pulled also makes stringlining a lot less likely on a model railroad. If neither engine can move the train upgrade by itself, the pusher can't derail the train by buckling it in the middle. If either engine hesitates, the train just stalls.

With cabooses the question is whether the pusher can be behind the cabin or must be ahead of it. Often the deciding factor was whether the prototype's caboose had a steel underframe to transmit the pusher's power. There were also laws in a few states requiring pushers of a given weight or tractive effort to be ahead of occupied cabooses.

If the pusher is ahead of the caboose, some kind of switching maneuver, possibly involving a gravity "drop" from an inclined track, is needed to cut the pusher out of the train and get the caboose back on. Then the train needs to make a standing set-and-release brake test, which it may need to do anyway if it'll be descending a steep grade on the other side of the mountain. This can add interest even to through freight runs.

There's also drama in dropping a pusher on the fly from behind the caboose. The big roads did it with a long valve handle on the caboose platform to close the angle cock in the brake pipe, as well as a chain or extension lever to lift the coupler pin. The pusher's brakes set automatically when the air hoses separated and the train went on its way.

On model railroads we can simulate this maneuver by blocking open the knuckle of the pusher's front coupler. The pusher can stay with the train just by pushing hard enough to help. When the train starts over the summit, the pusher engineer can back off his throttle and let the train pull ahead.

Mid-train pushers add more complication, both in getting the helpers into the train and out of it again. This was usually done where there were crossovers between parallel tracks. Again, a brake test would definitely be required when the train was back together.

**Operating rules** treat helpers as part of the train they're helping. The helper crews receive copies of all the clearances, train orders, or track warrants delivered to the train while they're helping it.

Once cut off from a train, a helper engine needs independent authority to return to its base. Typically it runs as an extra train displaying white classification signals and rear-end markers.

On a road with two or more main tracks and current-of-traffic signalling, such movements were often authorized with a clearance card assigned a number and okayed by the dispatcher. On single track the light (without cars) engine would need a Form G running order.

Under Centralized Traffic Control, a clearance might be issued from an open office, or the crew could get the dispatcher's verbal authority, by telephone or radio, to proceed to the next signal and run on signal indication from there. Under track warrant authority the light helper needs its own warrant.

However it's done, getting the helpers back to their base adds at least one train movement down the grade for every train that needs help going up. MR



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